

Clinical Bacteriology

John Lynch, MD, MPH

URL: <http://rwpoll.com>
Code: uwecho

This presentation is intended for educational use only, and does not in any way constitute medical consultation or advice related to any specific patient.

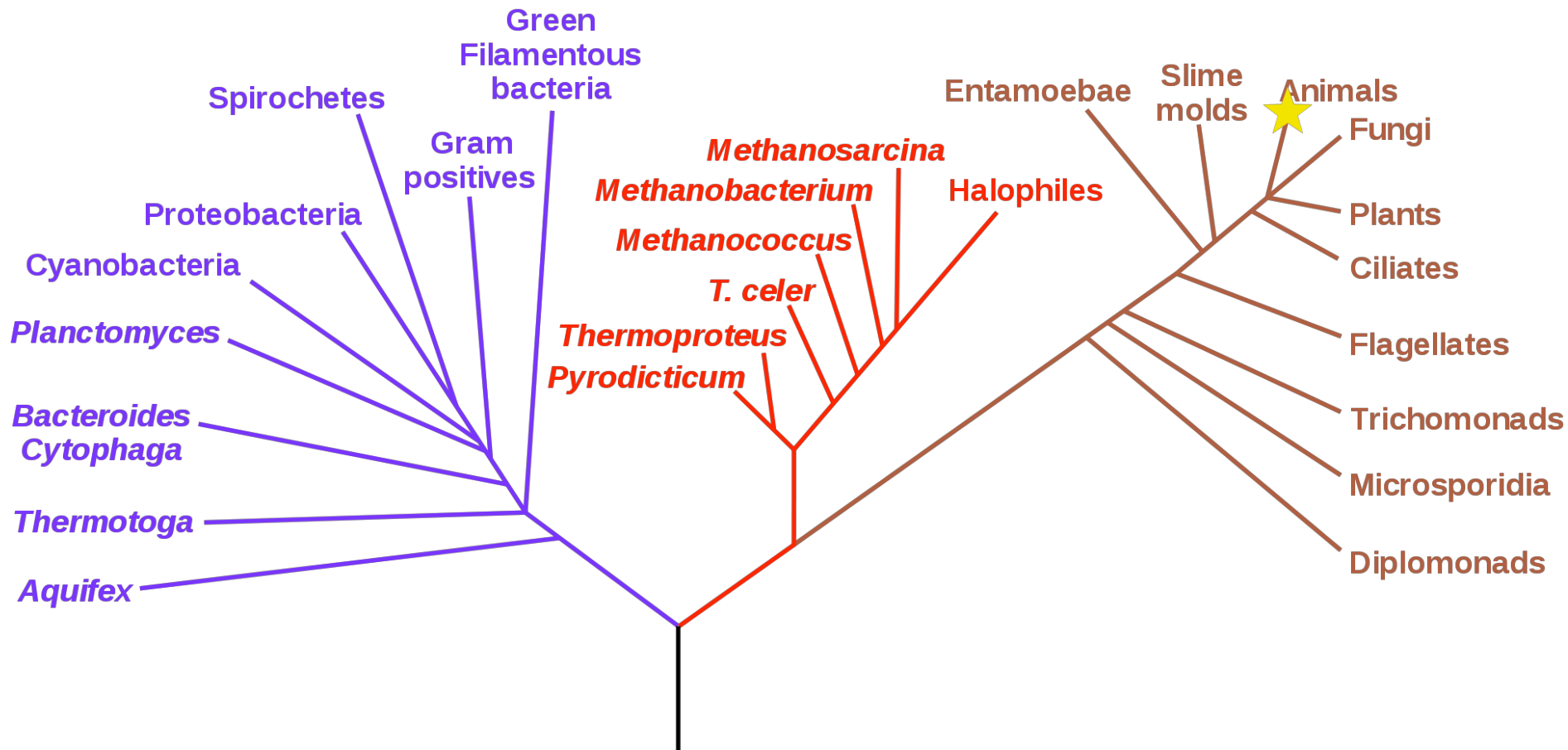
Phylogenetic Tree of Life

★ = You are here

Bacteria

Archaea

Eucaryota



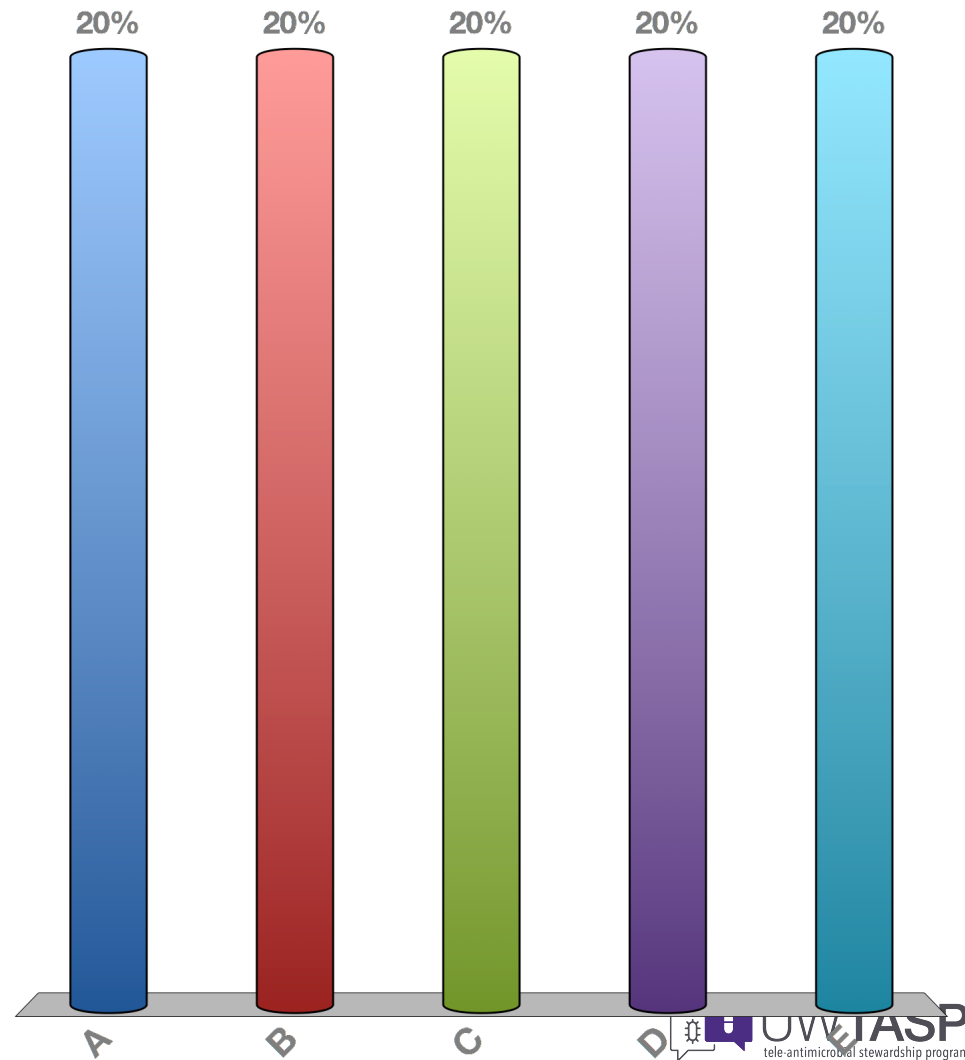
Clinical Case

- Ms. M is a 56 year old woman with diabetes and end-stage renal disease on HD
- An arterio-venous fistula is in place, but not yet mature, so access is by a tunneled line
- Yesterday she spiked a fever (39°C) and a single set of blood cultures were drawn
- The lab calls today to let you know that there are GPCs in clusters growing in both bottles



Microbiological Diagnosis?

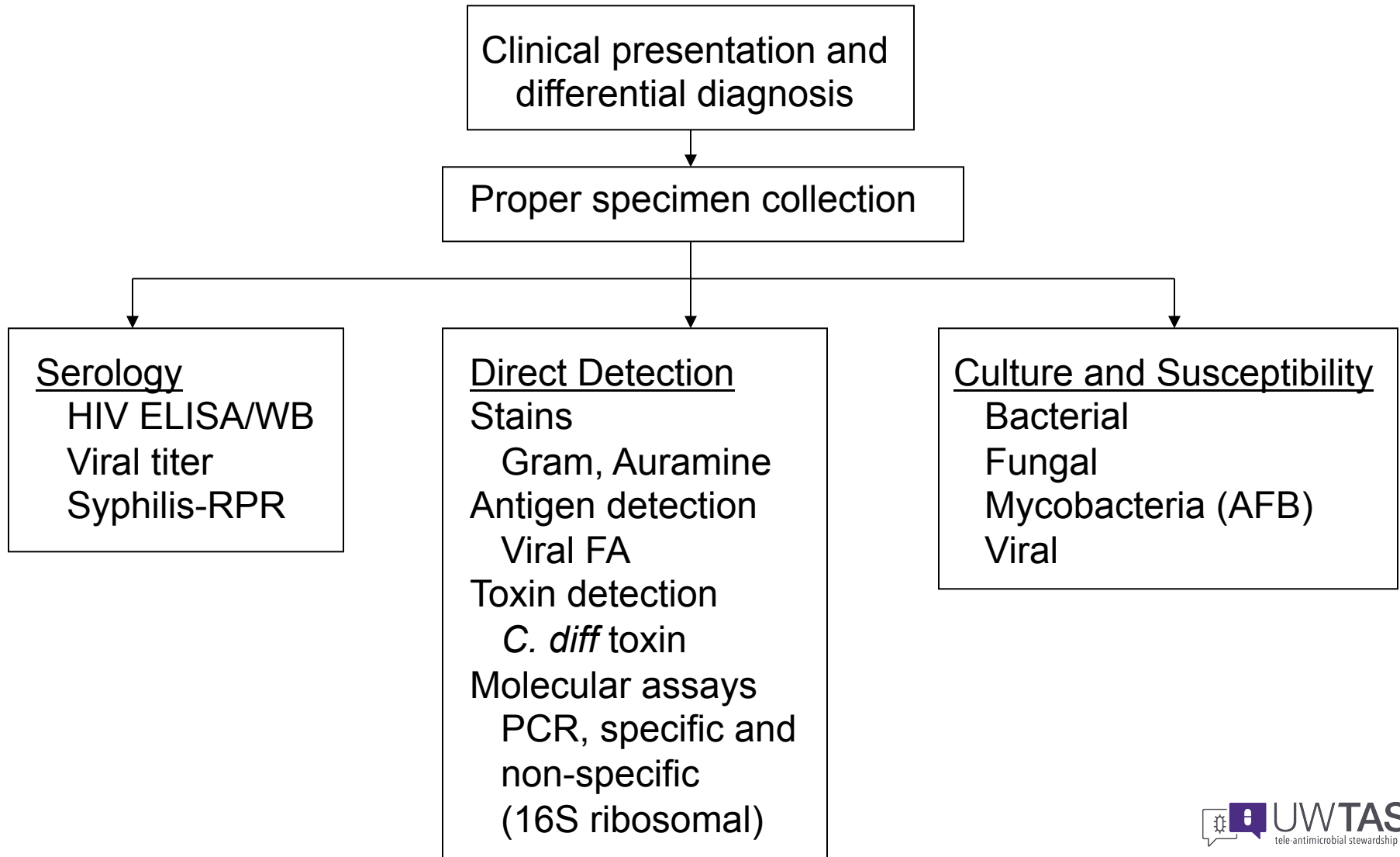
- A. *E. coli* bacteremia
- B. MRSA bacteremia
- C. *Pseudomonas* bacteremia
- D. *Candida* bacteremia
- E. *M. tuberculosis* bacteremia

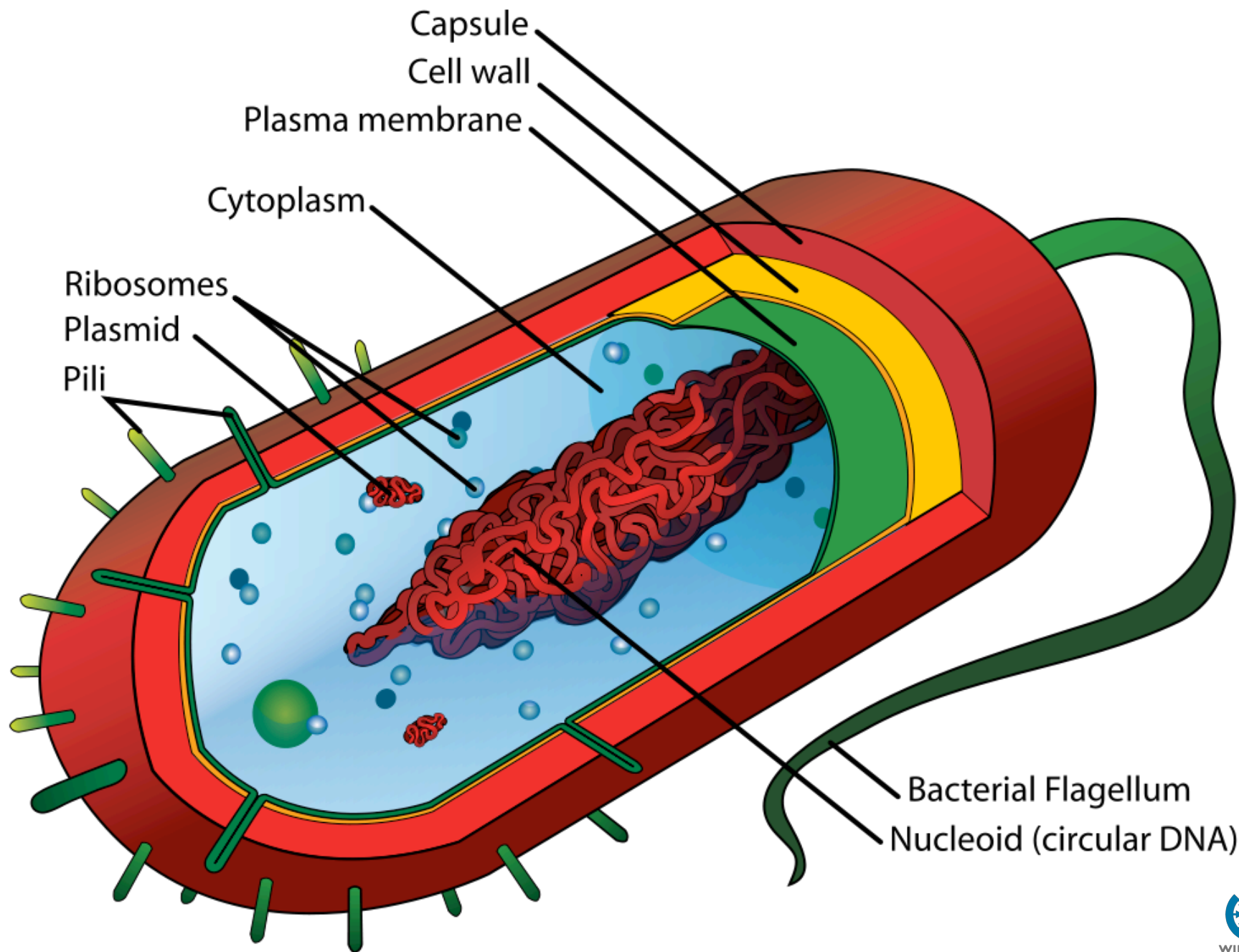


URL: <http://rwpoll.com>

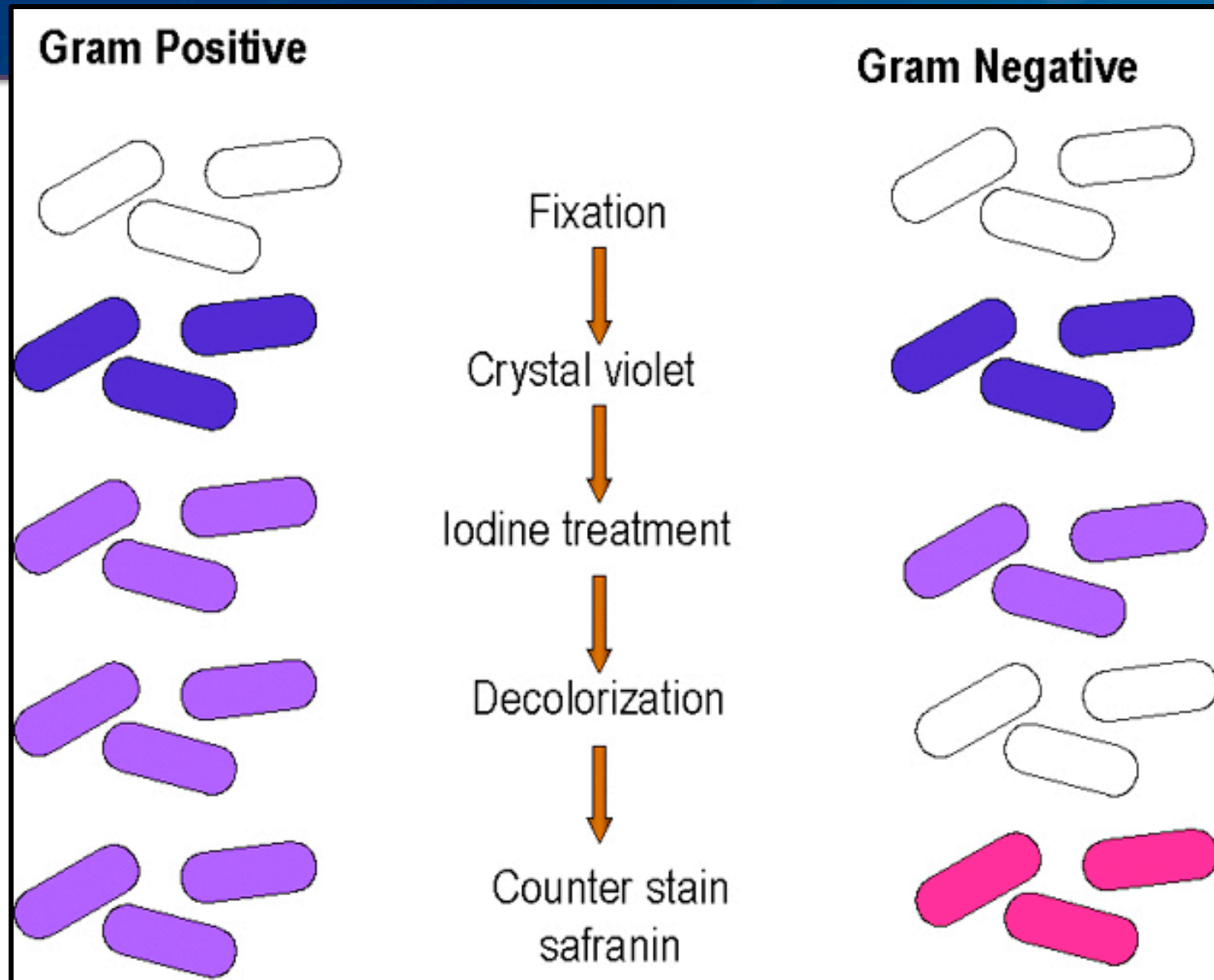
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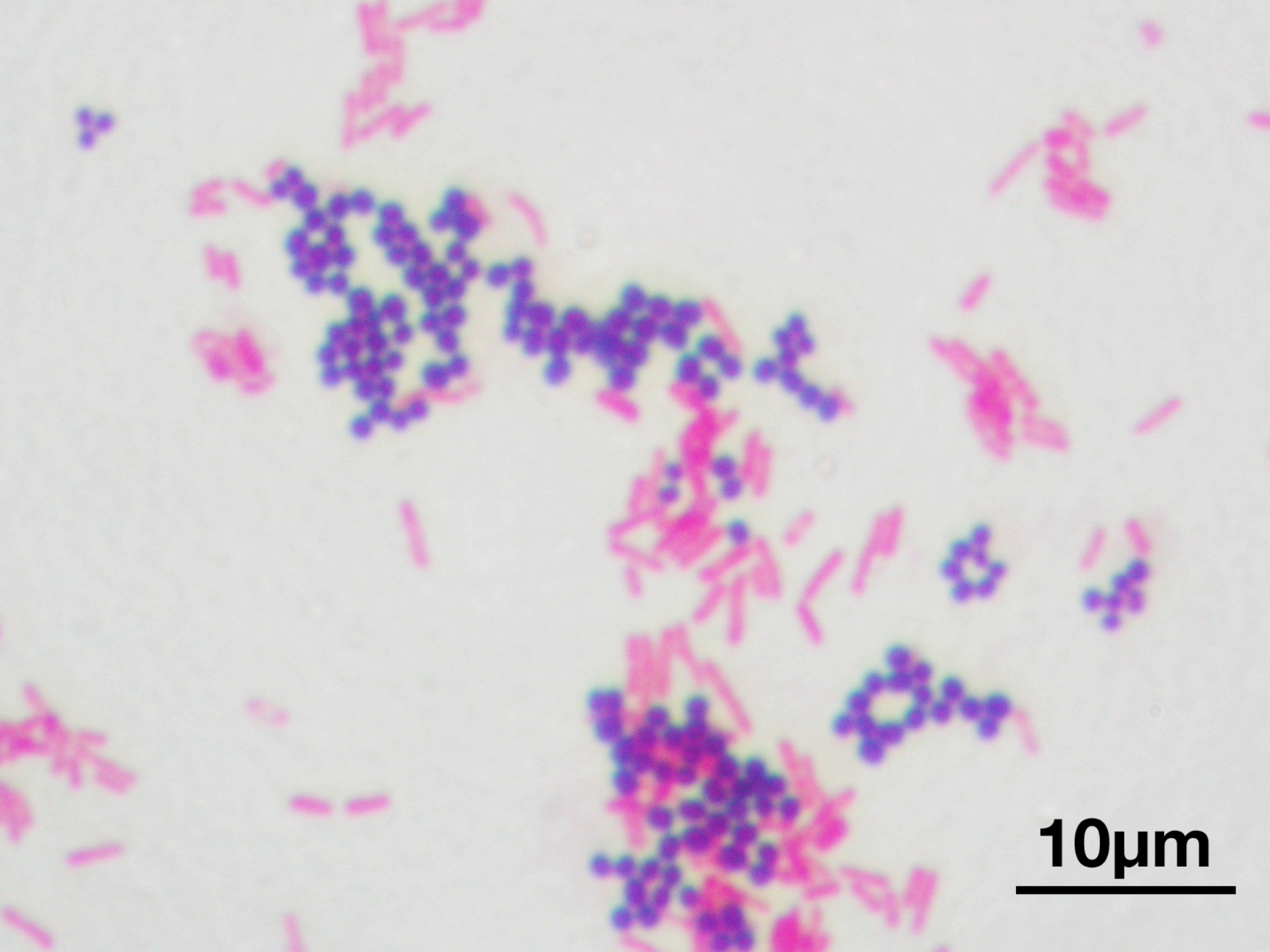
Infectious Disease Diagnostics





Gram Stain





10μm

Plasma membrane

Cell wall

Periplasmic space

Gram Positive

A diagram of a Gram Positive cell wall structure. It consists of a central cyan rounded rectangle labeled "Gram Positive". This rectangle is surrounded by three concentric layers: a blue line, a green line, and a red line. Three leader lines point from the labels "Plasma membrane", "Cell wall", and "Periplasmic space" to the blue, green, and red layers respectively.

Outer membrane

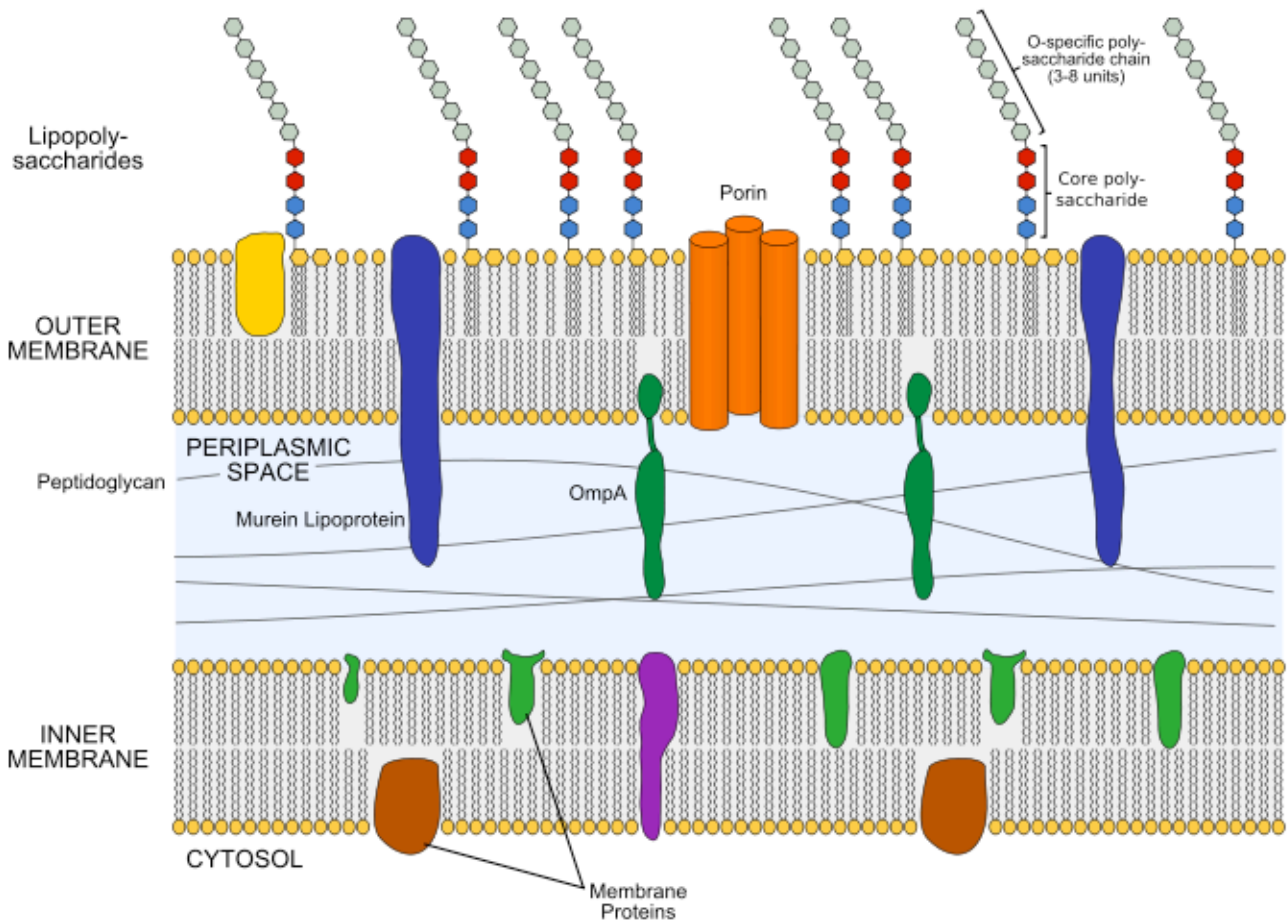
Plasma membrane

Cell wall

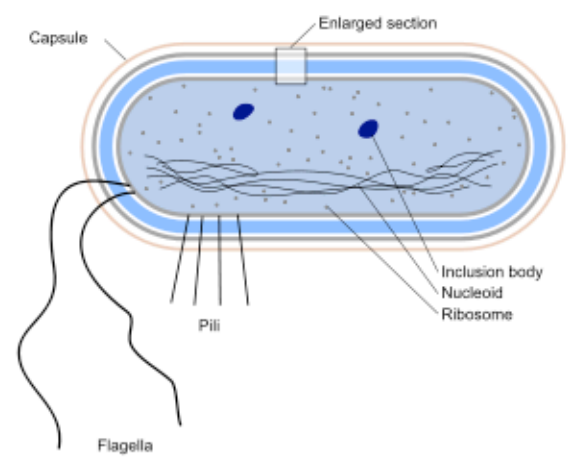
Periplasmic space

Gram Negative

A diagram of a Gram Negative cell wall structure. It consists of a central cyan rounded rectangle labeled "Gram Negative". This rectangle is surrounded by four concentric layers: a blue line, a green line, a red line, and an outer blue line. Four leader lines point from the labels "Outer membrane", "Plasma membrane", "Cell wall", and "Periplasmic space" to the outer blue, red, green, and inner blue layers respectively.

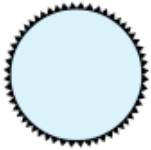


Gram Negative Bacterial Cell Wall

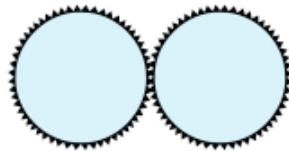


Arrangements of Cocci

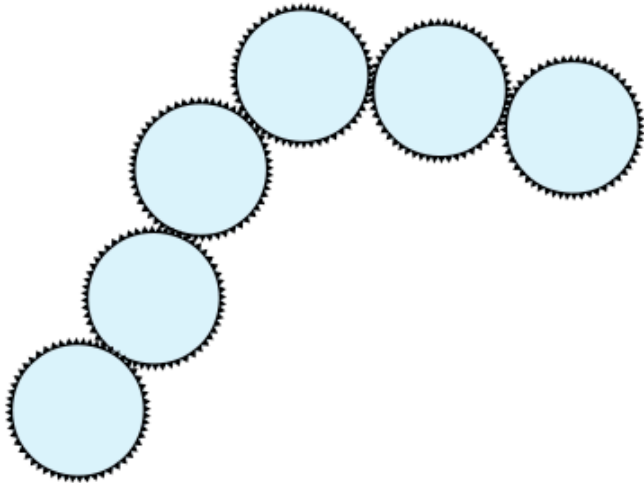
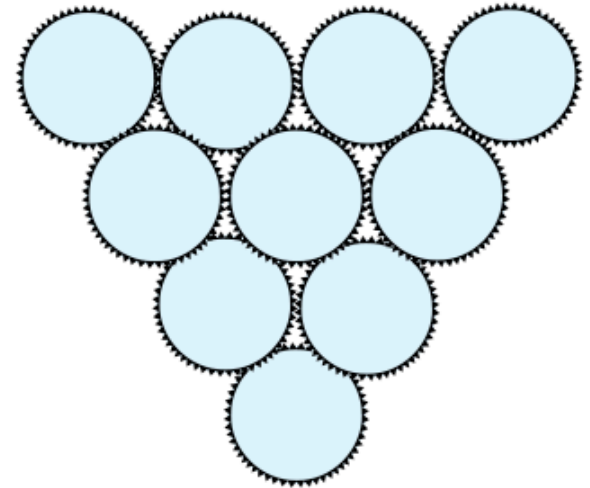
coccus



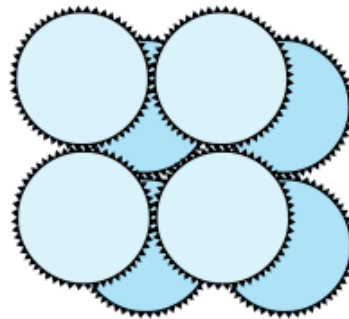
diplococci



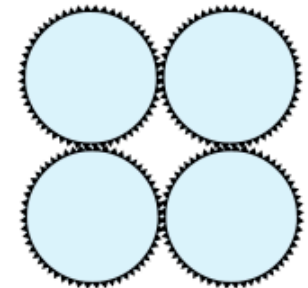
Staphylococci



streptococci

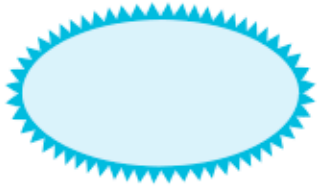


sarcina



tetrad

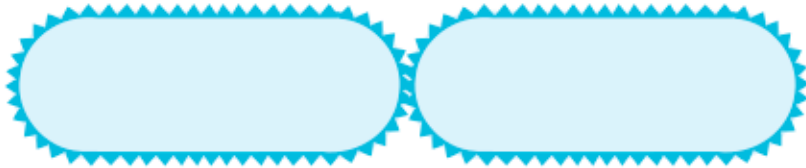
Arrangements of Bacilli



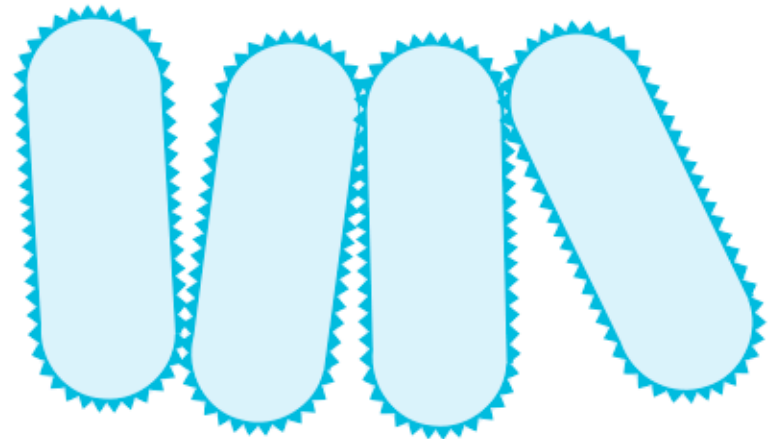
coccobacillus.



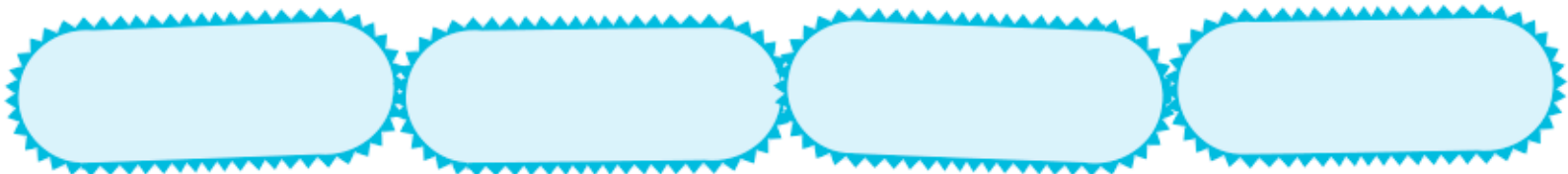
bacilli



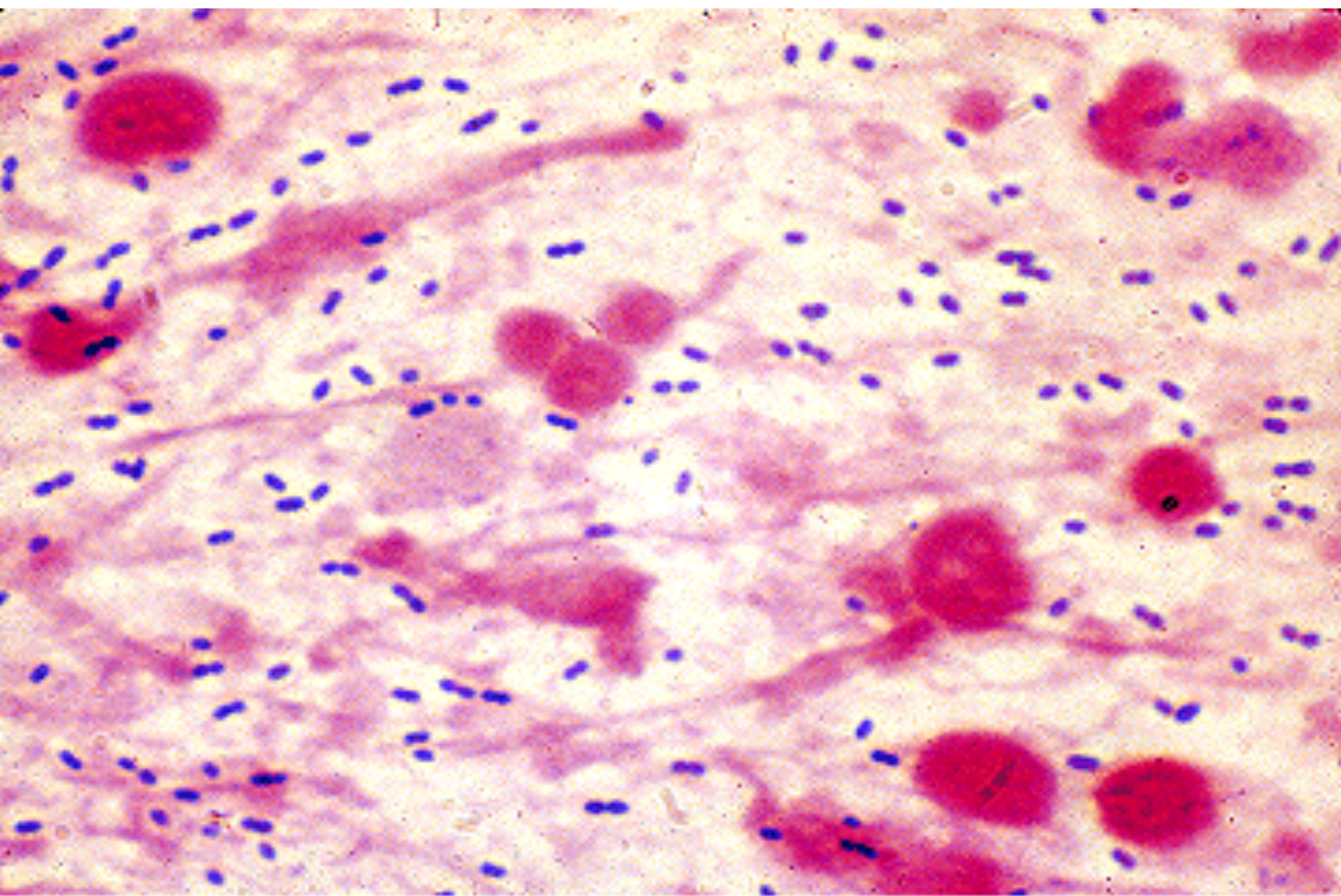
diplobacilli



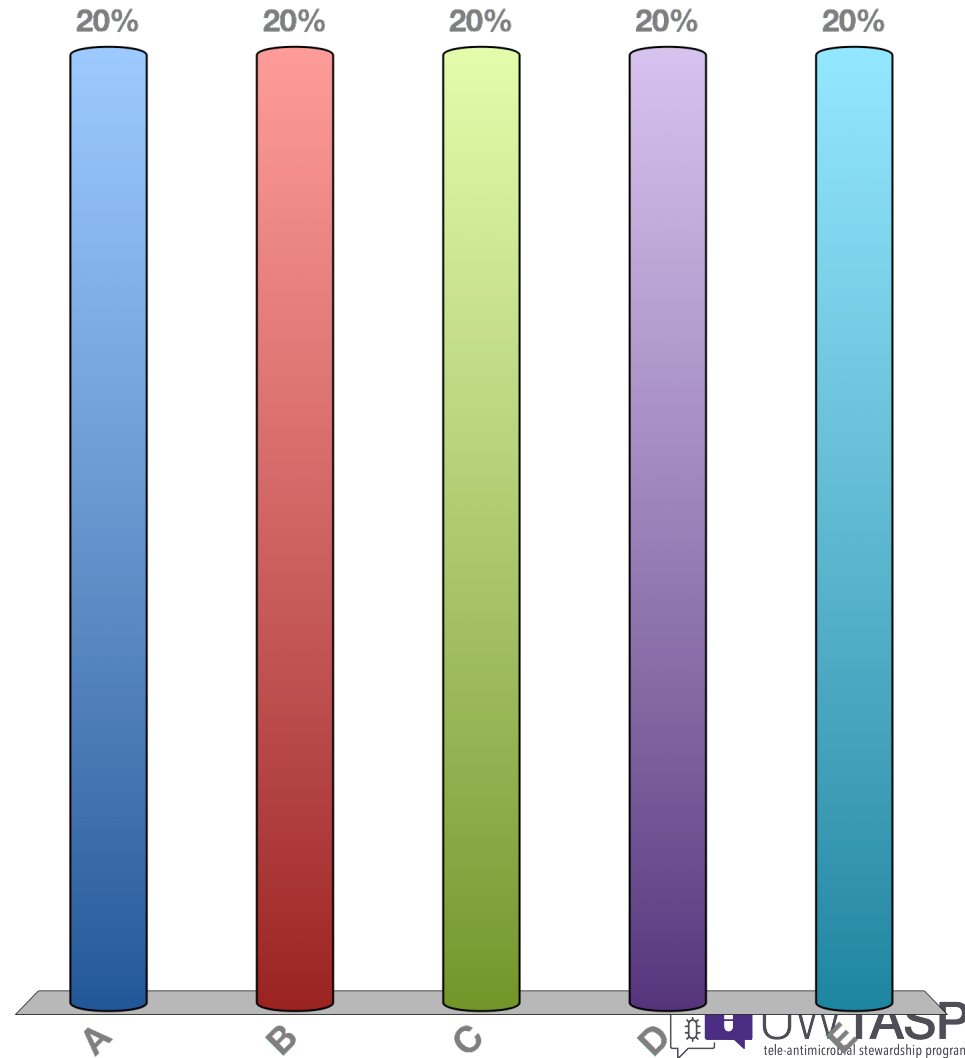
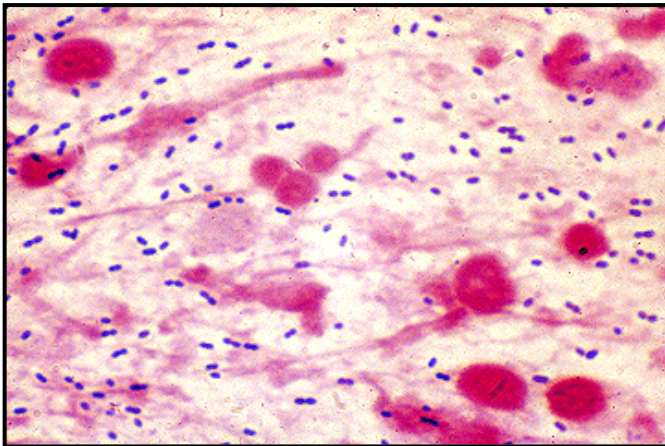
palisades.

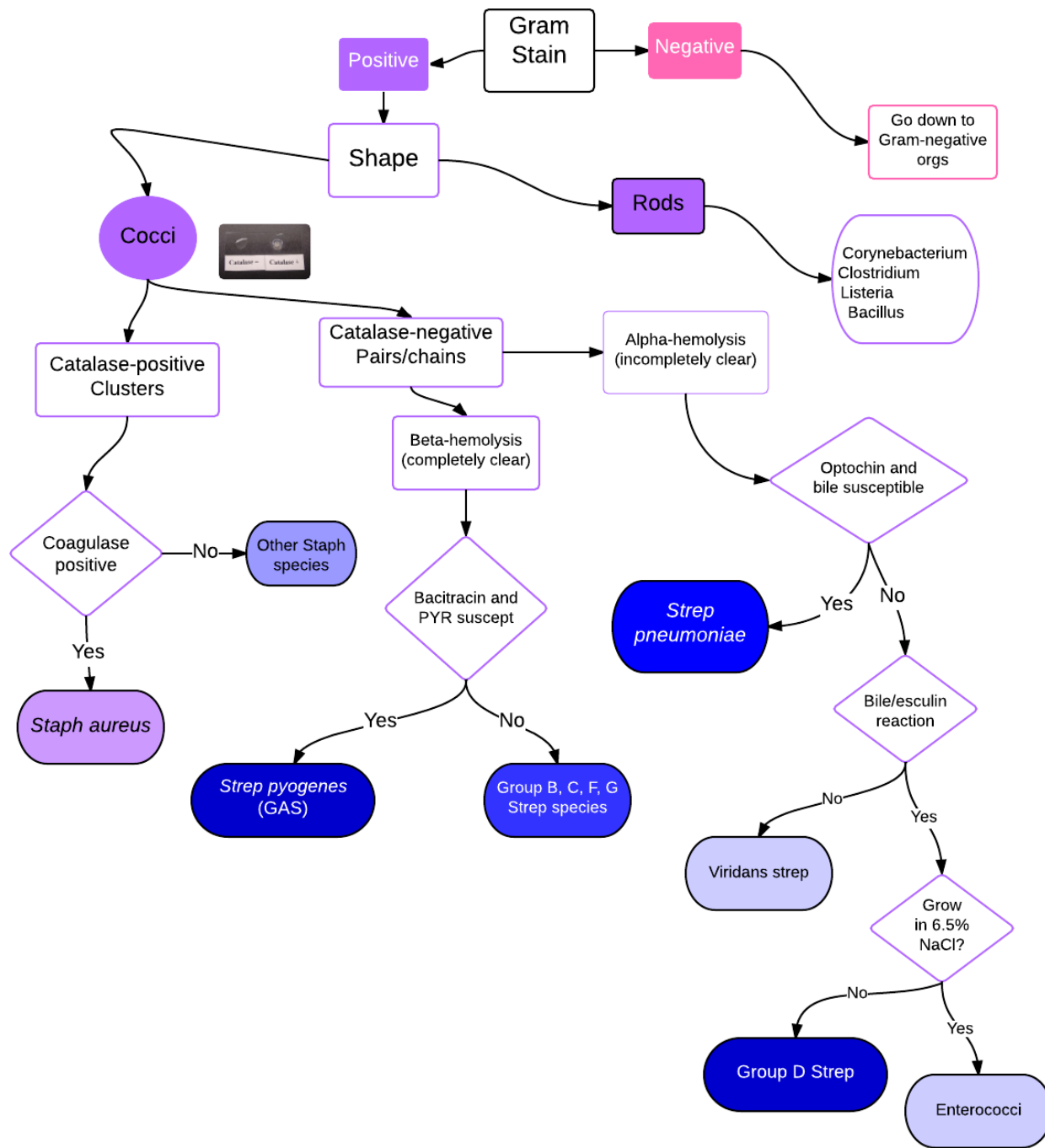


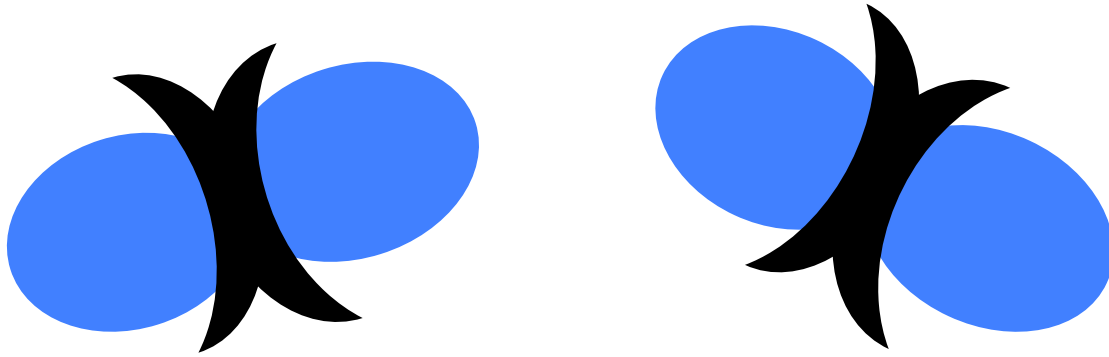
Streptobacilli



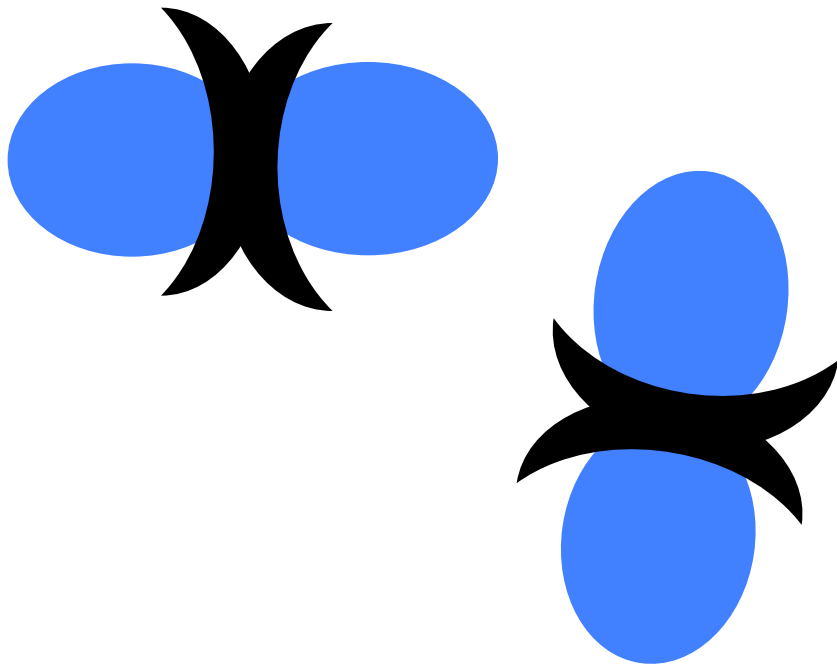
- A. Gram-positive cocci
- B. Gram-negative rods
- C. Gram-positive rods
- D. Gram-negative cocci
- E. No bacteria

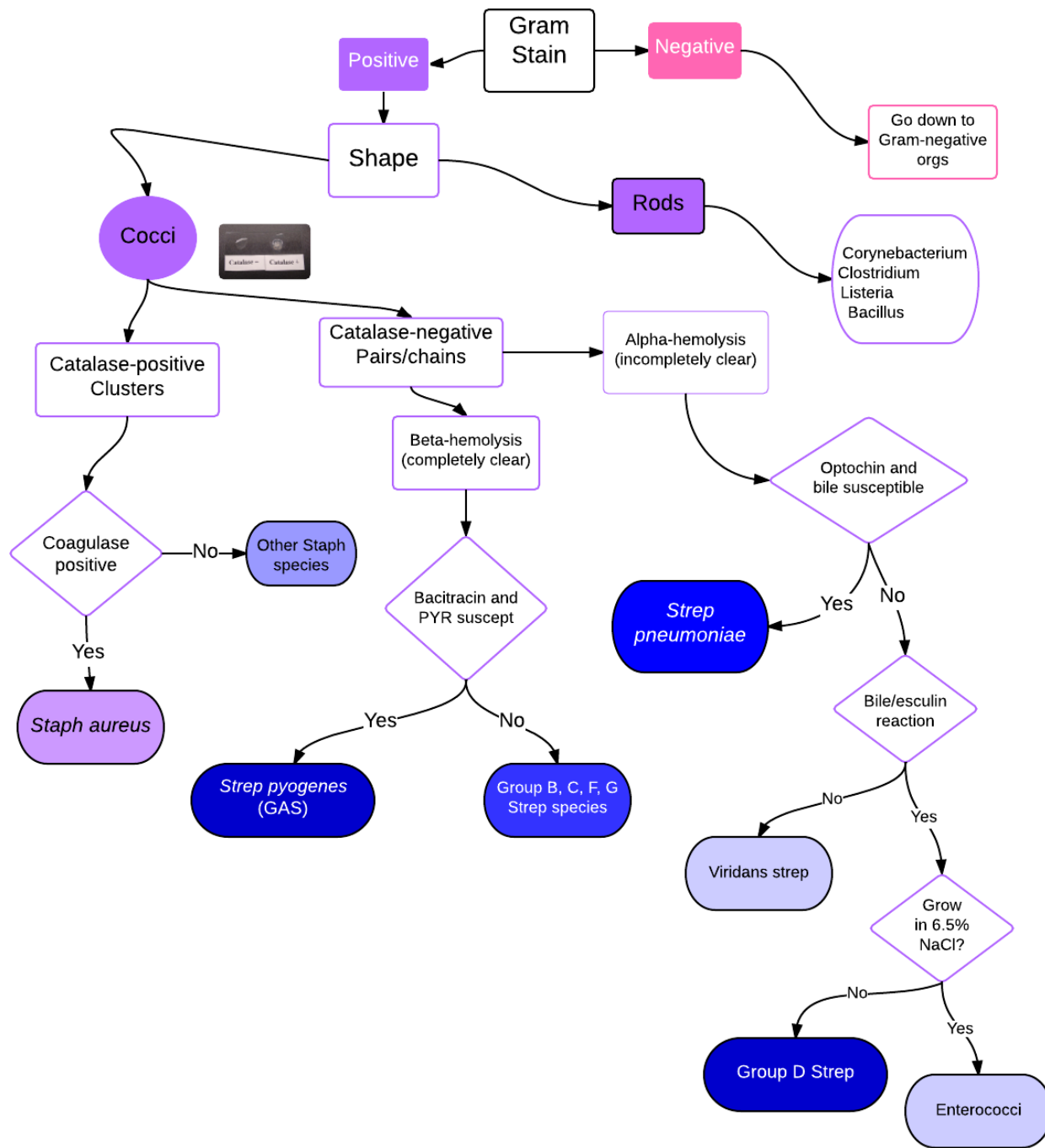




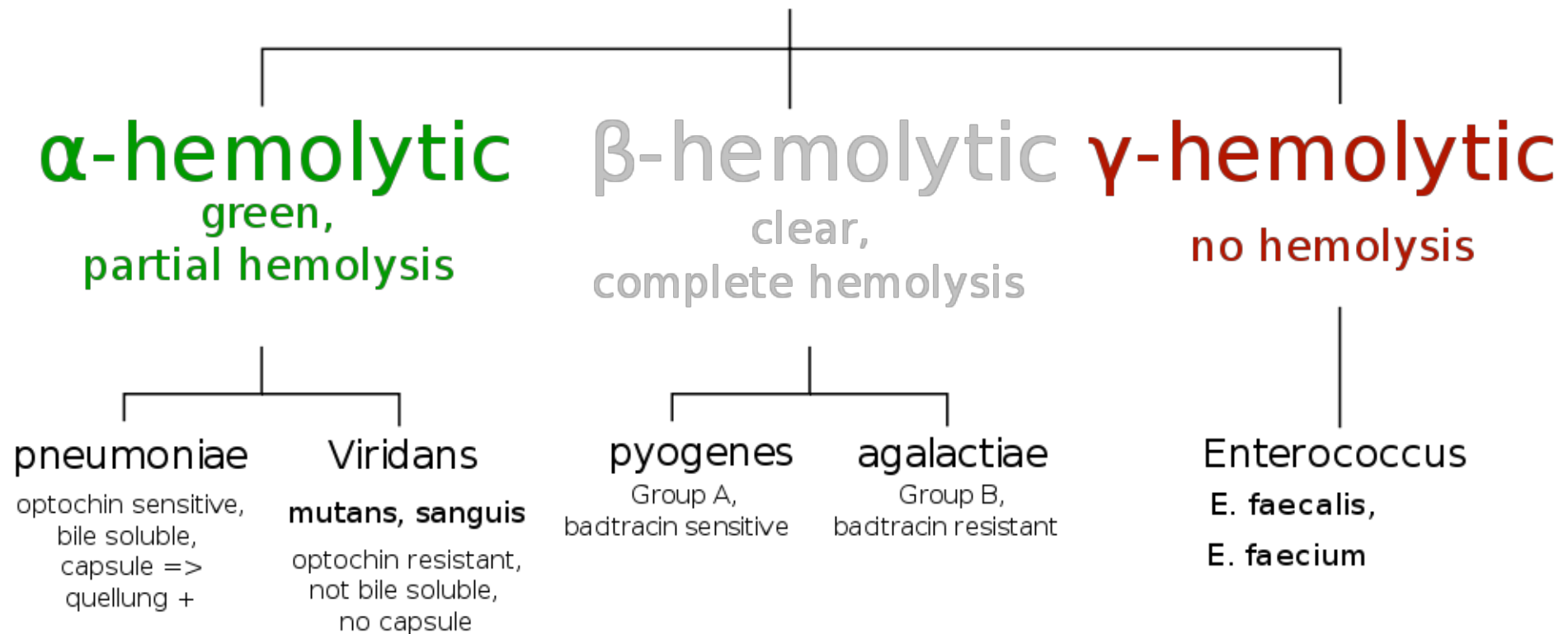


Lancet-shaped gram-positive diplococci



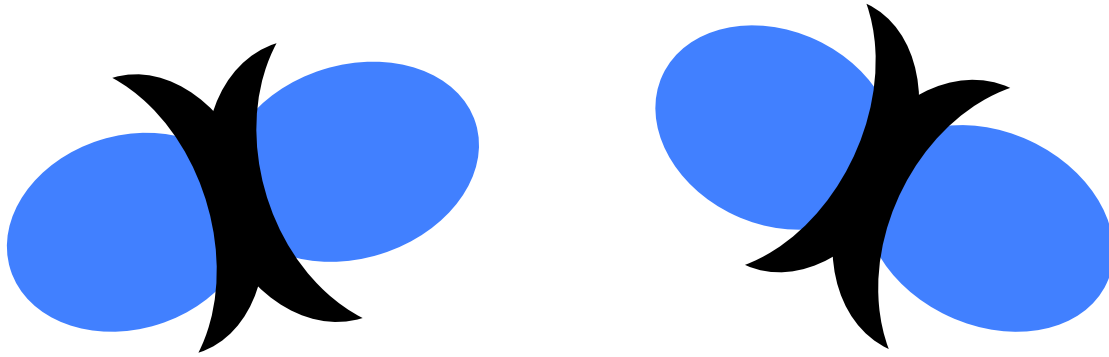


Streptococcus



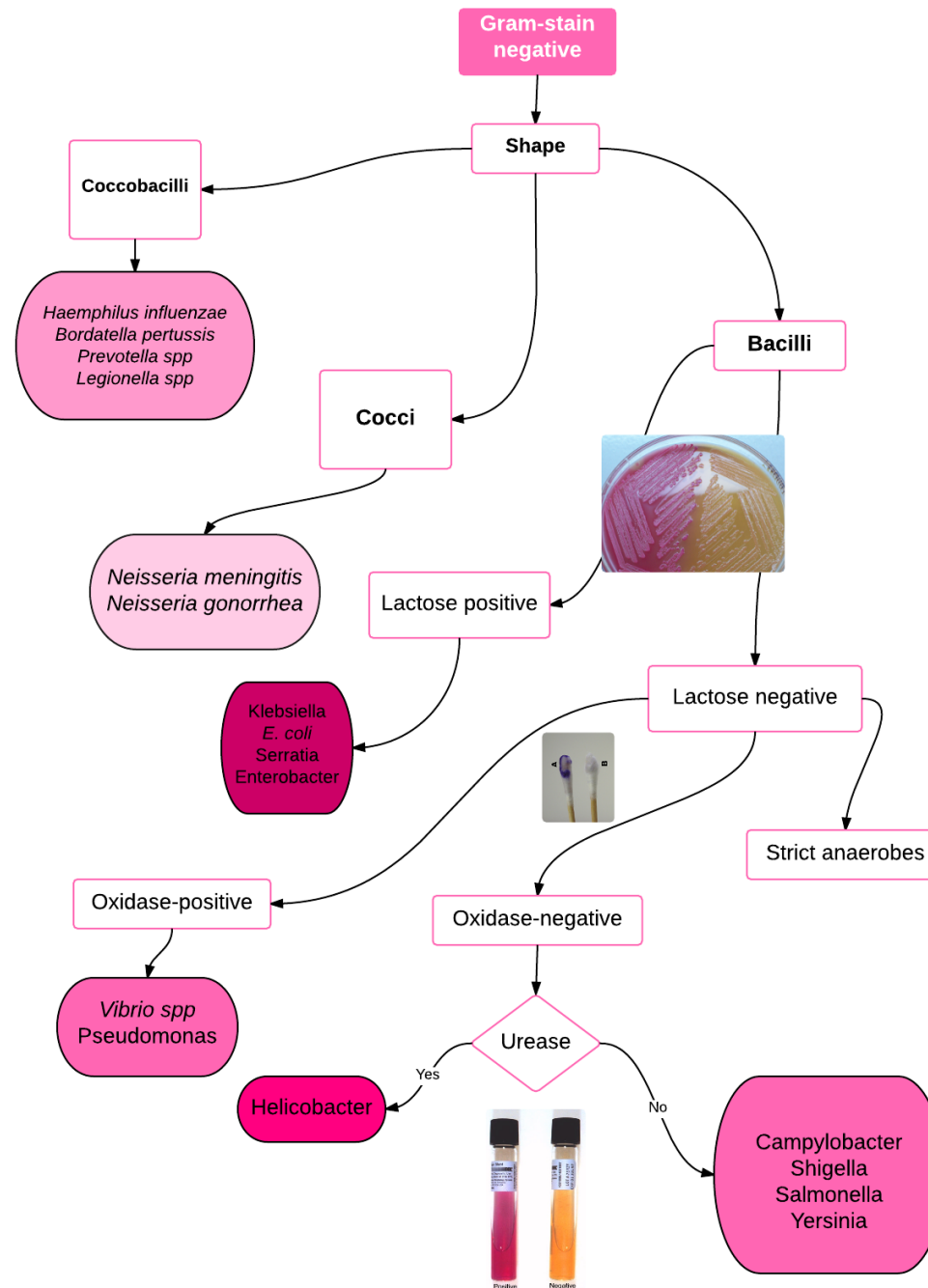
Hemolysis

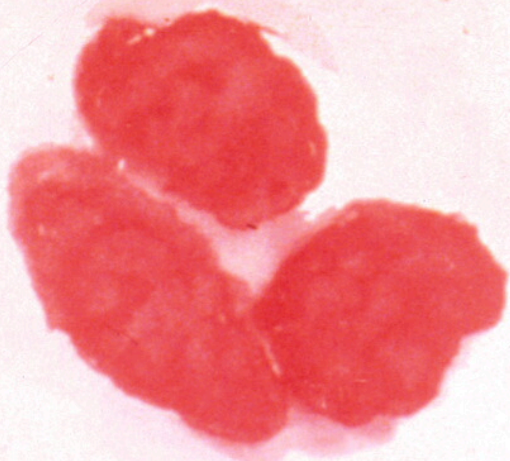
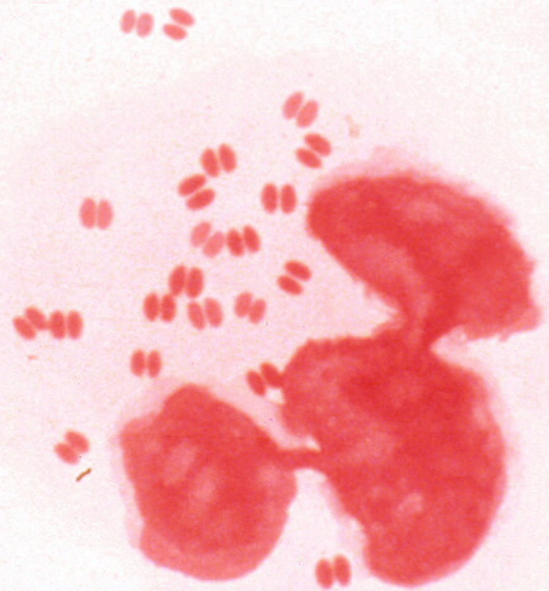
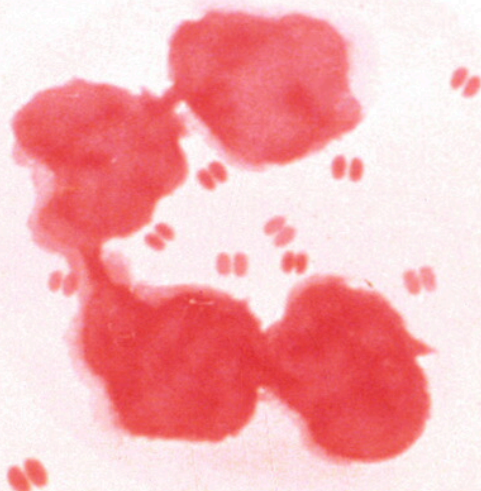




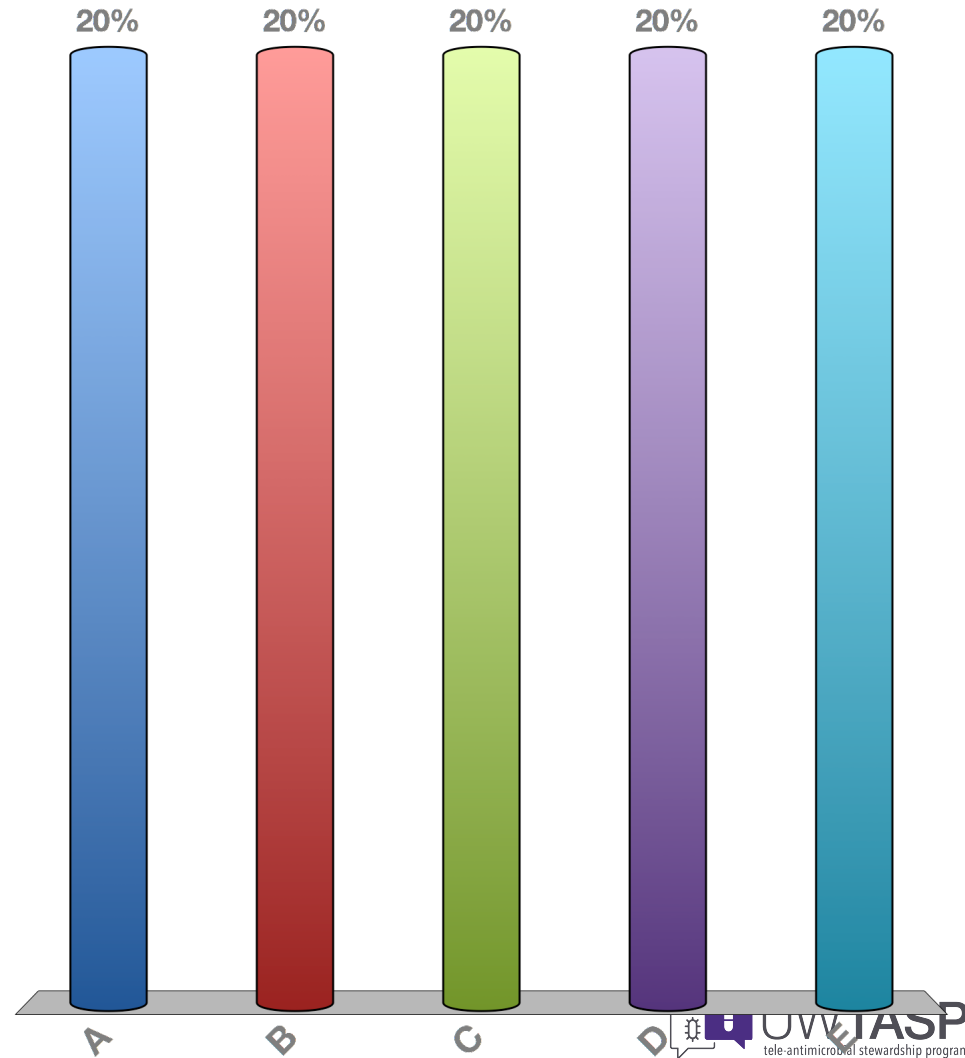
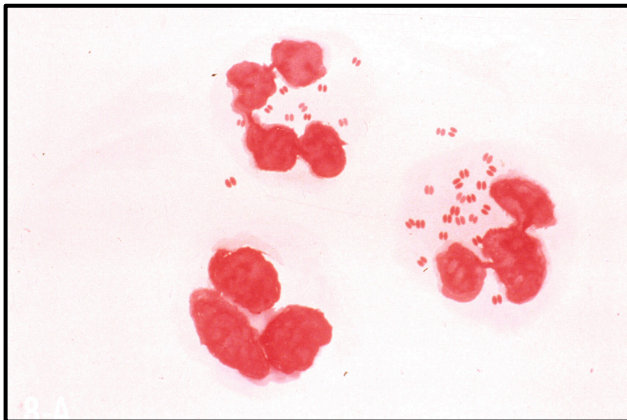
Lancet-shaped gram-positive diplococci

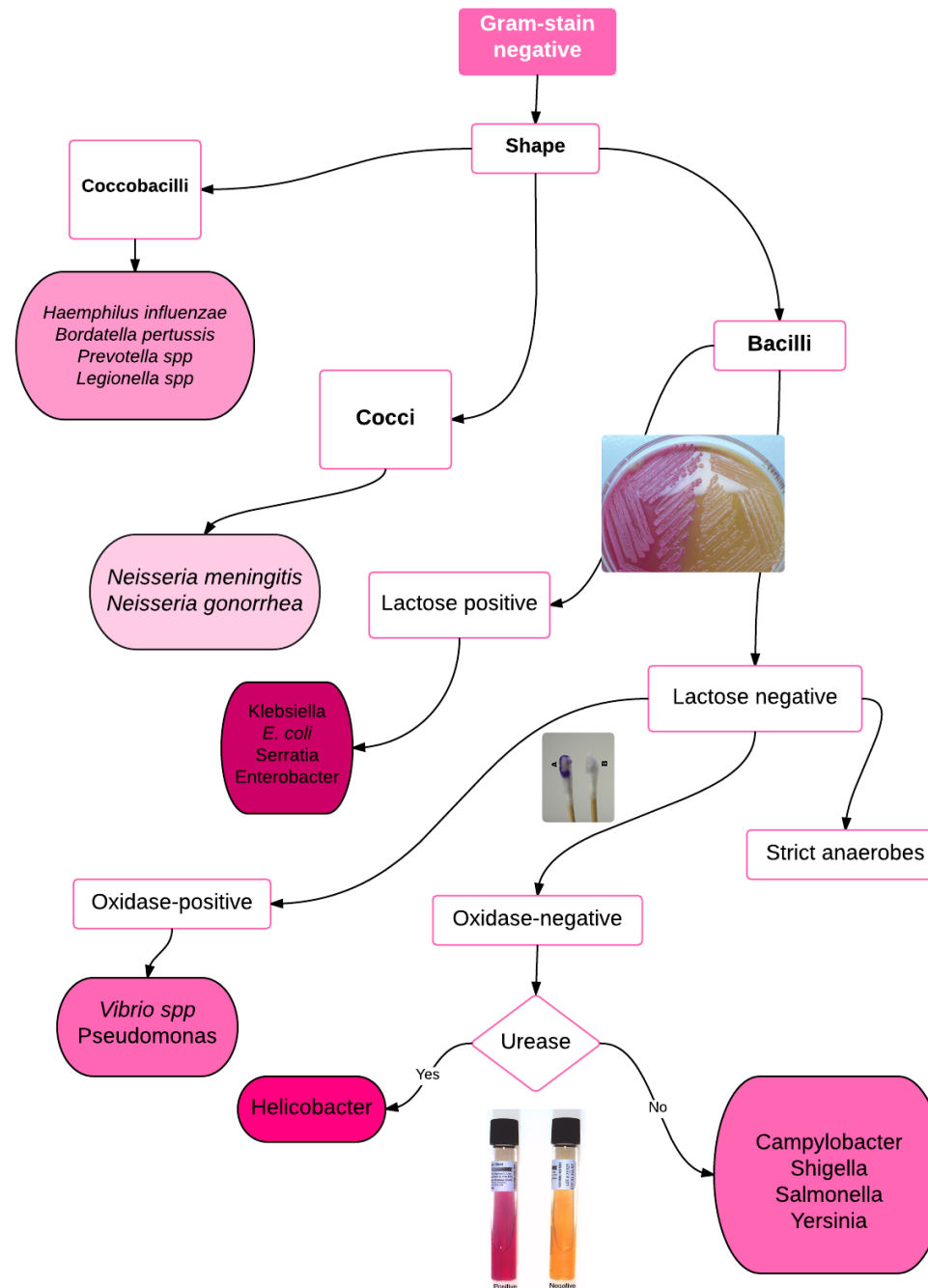
Working diagnosis:
Streptococcus
pneumoniae

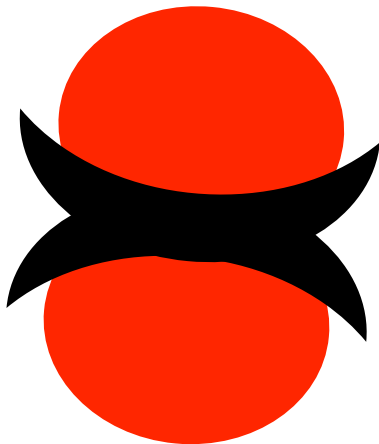
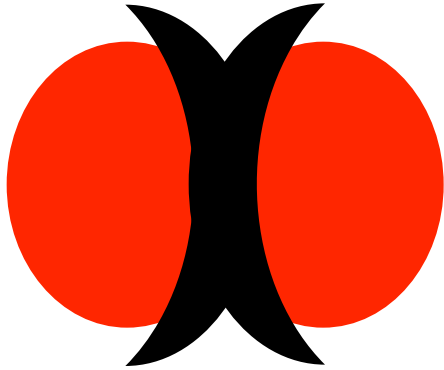




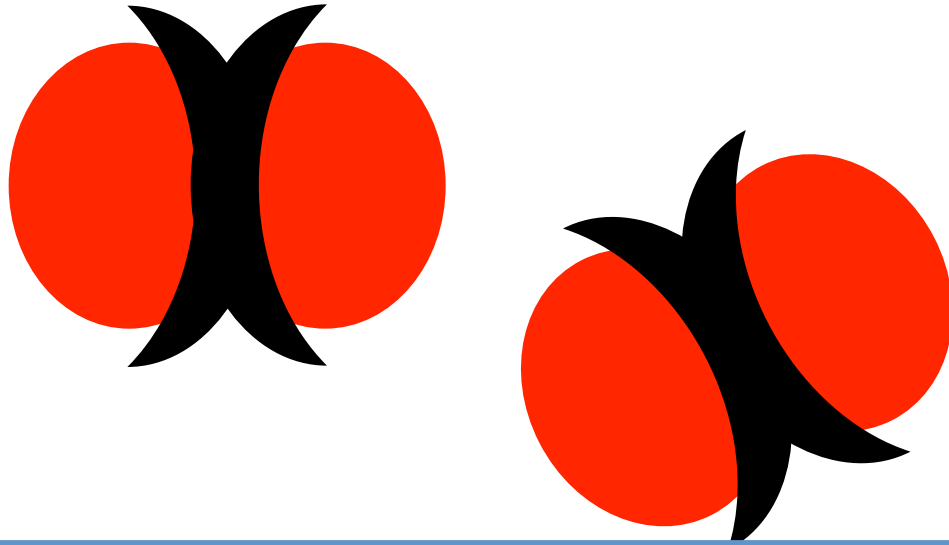
- A. Gram-positive cocci
- B. Gram-negative rods
- C. Gram-positive rods
- D. Gram-negative cocci
- E. No bacteria







Gram-Negative Diplococci



Gram-Negative

Working diagnosis:
Neisseria gonorrhea or
meningitidis

Clinical Case

- Ms. M is a 56 year old woman with diabetes and end-stage renal disease on HD
- An arterio-venous fistula is in place, but not yet mature, so access is by a tunneled line
- Yesterday she spiked a fever (39°C) and a single set of blood cultures were drawn
- The lab calls today to let you know that there are GPCs in clusters growing in both bottles

MRSA bacteremia