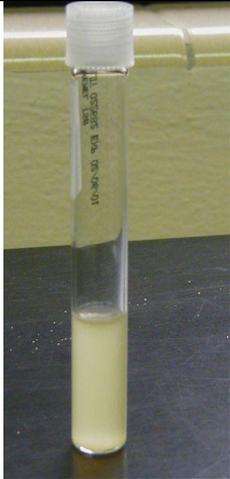
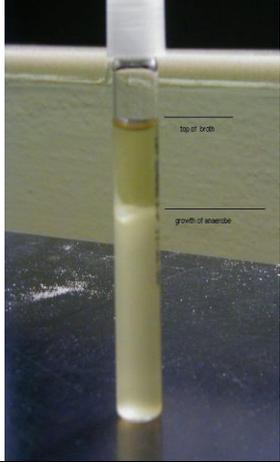
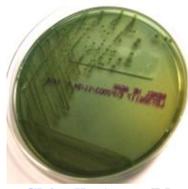


Oxygen relation	Definition	Examples	Picture
Facultative Anaerobe	Does not require oxygen. Can grow with or without it. Able to detoxify toxic by products of oxygen. Growth throughout the test tube. Due to ability to grow with or without oxygen.	E. Coli	
Microaerophile	Does not grow in atmospheric oxygen, but requires a small amount for growth. Able to detoxify toxic by products of oxygen. Growth in the middle of tube. Due to not being able to grow in high oxygen, or no oxygen.	Micrococcus luteus	
Anaerobe	Lacks the enzyme for using oxygen. Can't live in oxygen. NOT able to detoxify toxic by products of oxygen. Growth at bottom of tube. Due to not being able to grow in oxygen.	Clostridium	
These test tubes have an oxygen gradient. The highest oxygen level at the top of the tube, and little to no oxygen at the bottom.			
<p>Anaerobic jar can also be used. A chemical pack and water is used, producing hydrogen and carbon dioxide. The hydrogen reacts with the free oxygen in the jar producing water, and an anaerobic condition. A methylene blue indicator is used to show the oxygen content. Blue = oxygen, white = NO oxygen. Mention in lab textbook. The indicator used in the lab turns red in the present of oxygen and white in the absence.</p>			

GRAM NEGATIVE

Enteric	Coliform	Lactose	Flora
<p>E. Coli</p>  <p>EMB - E. Coli has a green metallic sheen on EMB. Due to being a vigorous lactose fermenter</p>	<p>Coliform</p>	<p>Lactose fermenter</p>	<p>Normal Flora</p>  <p>Hektoen - E. Coli has a pink to orange color (salmon) due to lactose fermentation</p>
<p>Enterobactor</p>  <p>EMB - Enterobactor has a pink color due to lactose fermentation.</p>	<p>Coliform</p>	<p>Lactose Fermenter</p>	<p>Normal Flora</p>  <p>Hektoen - Enterobactor has a pink to orange color (salmon) due to lactose fermentation</p>
<p>E. Coli is distinguished from Enterobactor on the EMB agar by having a green sheen. GRAM + will not grow due to bile salts and some dyes on these plates.</p>			
<p>Proteus (opportunistic)</p>  <p>EMB - Proteus has NO color due to lactose NON-fermentation.</p>	<p>NonColiform</p>	<p>Lactose Non fermenter</p>	<p>Normal Flora</p>  <p>Hektoen - Proteus has a BLACK precipitate due to H2S Production</p>
<p>Salmonella</p>  <p>EMB - Salmonella has NO color due to lactose NON-fermentation.</p>	<p>True Pathogen</p>	<p>Lactose Non fermenter</p>	<p>Not Normal Flora</p>  <p>Hektoen - Salmonella has a BLACK precipitate due to H2S Production</p>
<p>Shigella</p>  <p>EMB - Shigella has NO color due to lactose NON-fermentation.</p>	<p>True Pathogen</p>	<p>Lactose Non fermenter</p>	<p>Not Normal Flora</p>  <p>Hektoen - Shigella has a Blue-green color with NO Black precipitate due to NO H2S Production</p>
<p>Proteus, Salmonella, and Shigella look the same on EMB agar due to being lactose NON fermenters. Proteus and Salmonella Look similar on Hektoen due to Black Precipitate due to H2S production. An Eterotube is used to distinguish between them. Enterotube may be used for distinguishing all Enterics. GRAM + will not grow due to bile salts and some dyes on these plates.</p>			
<p>NORMAL EMB</p> 		<p>NORMAL HEKTOEN</p> 	

GRAM POSITIVE

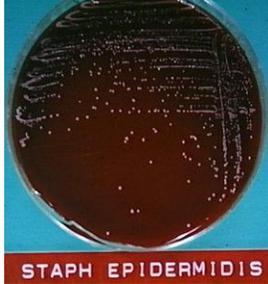
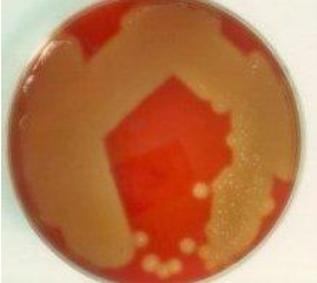
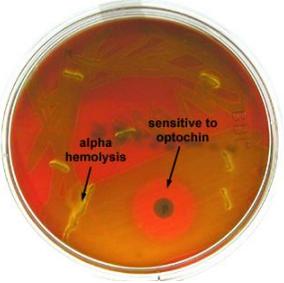
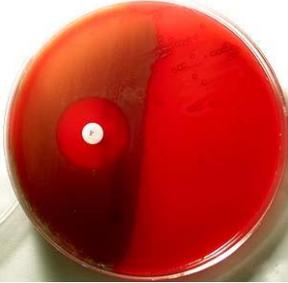
Bacteria	FLORA		Hemolyses
<p>Staphylococcus Aureus</p> 	<p><u>Not</u> normal Flora</p>	<p>Ferments Manitol; bubbles with H₂O₂</p>	<p>BETA</p> 
<p>Staph Aureus Causes a yellow color due to pH < 6.8 due to fermentation of manitol. Staph Aureus causes complete (Beta) hemolyses on blood agar. Manitol plate distinguishes between Staph A., and Staph E. Confirmation of Staph Aureus using an agglutination test.</p>			
<p>Staphylococcus Epidermidis</p> 	<p>Normal flora (skin)</p>	<p><u>NOT</u> manitol fermenter; bubbles with H₂O₂</p>	<p>GAMMA</p>  <p style="text-align: center; background-color: black; color: white; font-weight: bold;">STAPH EPIDERMIDIS</p>
<p>Staph Epidermidis does not ferment manitol, → pH > 7.4 → pink color. Staph Epidermidis does <u>not</u> hemolyse blood → Gamma hemolyses.</p>			
<p>Catalase test will distinguish between Staph and Strep. Staph will cause bubbling with hydrogen peroxide. Strep will NOT bubble with hydrogen peroxide. GRAM Negative will NOT grow on manitol due to sodium chloride of 7.5%</p>			
<p>Streptococcus Pyogenes</p> 	<p><u>Not</u> normal Flora</p>	<p><u>NO</u> bubbles with H₂O₂</p>	<p>BETA</p> 
<p>Streptococcus Pyogenes causes complete (Beta) hemolyses on blood agar. Streptococcus Pyogenes is sensitive to Bacitracin (A disc).</p>			
<p>Streptococcus pneumoniae</p>  <p style="font-size: small;">alpha hemolysis sensitive to optochin</p>	<p>Normal flora (nose)</p>	<p><u>NO</u> bubbles with H₂O₂</p>	<p>ALPHA</p> 
<p>Streptococcus pneumoniae causes partial (Alpha) hemolyses on blood agar, → greenish color. Streptococcus pneumoniae is sensitive to Optichin (P disc).</p>			

Plate	Bacteria	Results
EMB	E. Coli	Green sheen
	Enterobactor	Pink color
	Proteus	No color
	Salmonella	No color
	Shigella	No color
	Gram positive does not grow here due to bile salts and dyes.	
Hektoen	E. Coli	Salmon color
	Enterobactor	Salmon color
	Proteus	Black precipitate
	Salmonella	Black precipitate
	Shigella	Blue green, No Black Precip.
	Gram positive does not grow here due to bile salts and dyes.	
Manitol	Staphylococcus Aureus	Yellow color
	Staphylococcus Epidermidis	Pink color
	Gram negative does not grow here due to 7.5% sodium Chloride.	
Blood	Staphylococcus Aureus	Beta hemolyses (complete)
	Staphylococcus Epidermidis	Gamma hemolyses (none)
	Streptococcus Pyogenes	Beta hemolyses (complete)
	Streptococcus pneumoniae	Alpha hemolyses (partial)
	Gram negative will cause alpha Hemolyses.	

Diseases Caused by Staphylococcus a. - Impetigo, cellulitis, abscess, boils, furuncle, food poisoning, Toxic Shock Syndrome, septicemia

Diseases caused by Streptococcus species. – Sepsis, scarlet fever, Rheumatic Fever, Necrotizing Fasciitis, Toxic Shock Syndrome, septicemia, nephritis

HIV ELISA test :

Info <http://en.wikipedia.org/wiki/ELISA>

http://en.wikipedia.org/wiki/HIV_test

<http://www.nlm.nih.gov/medlineplus/ency/article/003538.htm>

Urine Unknowns

Urine sample → Streak on 3 plates:

-
1. **Blood agar**
- Alpha hemolysis
E. coli
Enterobacter
 - Beta hemolysis
Staph. aureus
 - Gamma hemolysis
Staph. Epidermidis(sometimes alpha)
Candida

ANY GROWTH IS
A URINARY
PATHOGEN

-
2. **EMB**
- ⊕ Growth
E. coli (green sheen)
Enterobacter (pink)
 - No Growth
All others

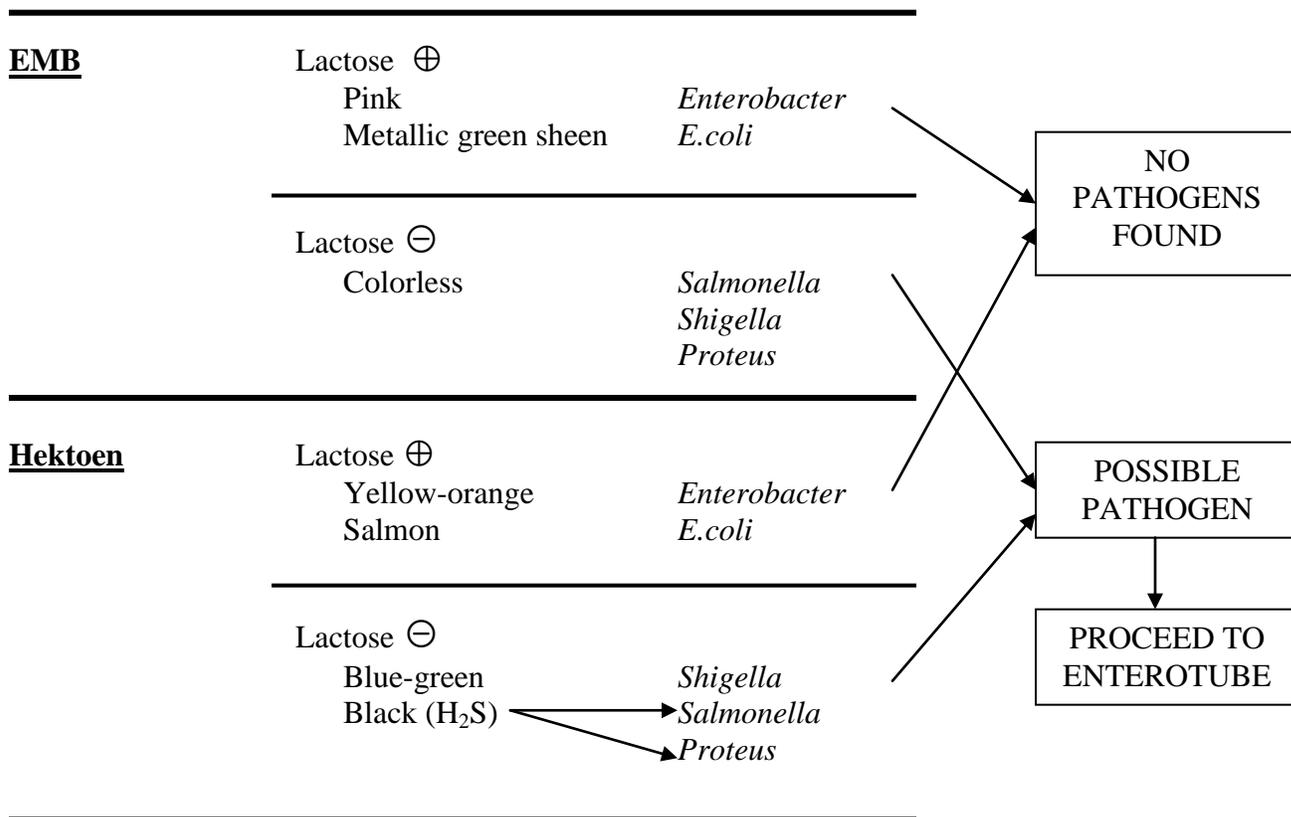
-
3. **Sabouraud**
- Good growth
White, creamy
Candida
 - Pinpoint colonies (for 1 day old plate)
E. coli
Enterobacter
Staph. aureus
 - Pinpoint colonies (for 1 day old plate)
Staph. e.
 - No growth
Strep. pyogenes
-

Gram Negative Bacilli

Stool Sample → Gram Negative Rods (bacillus)

Media Report

Lab



Gram Positive Cocci

