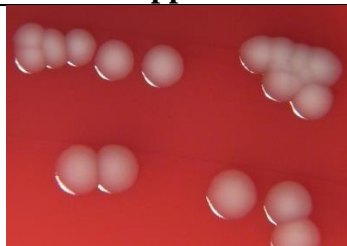




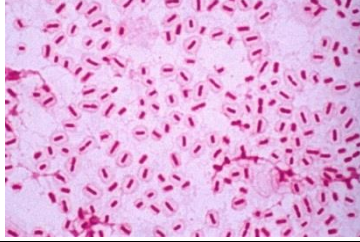
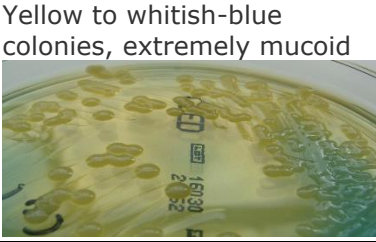




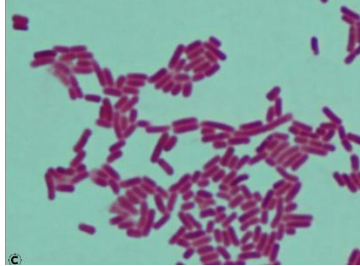

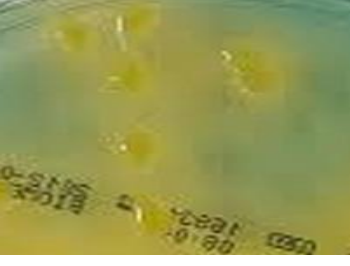


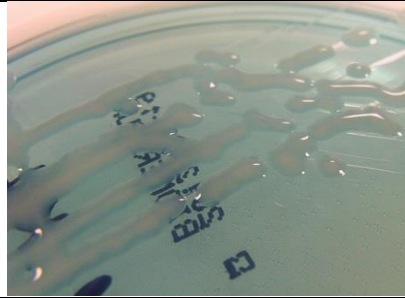








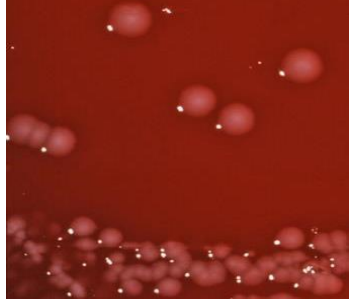




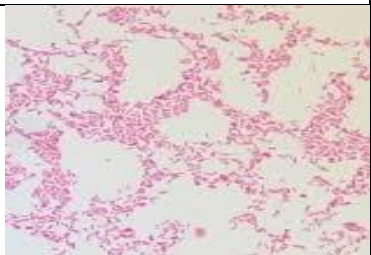

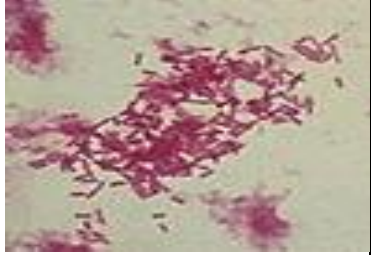


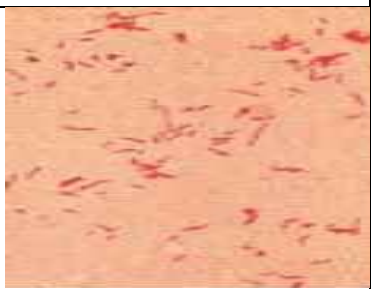
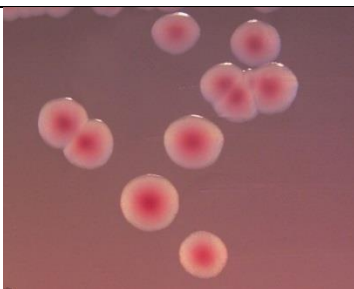


## Bacterial Identification – Gram Negative Rods (fermenters)

Organism	Plate Appearance	Gram Appearance	CLED	Other
<p><b><i>Escherichia coli</i></b>                      Oxidase negative                      +/- haemolytic on BA                      5% NLFs  <b>Indole + Citrate - VP -</b>                      API 20E</p>			<p>Opaque yellow colonies with a slightly deeper yellow center</p> 	<p>0157 colourless on sorbitol MacConkey</p> 
<p><b><i>Klebsiella</i></b>                      API 20E Ox-                      Facultative anaerobes                      Thicker than other GNRs                      VP + &amp; Indole - (<i>K. oxytoca</i> = Indole +)                      Many AmpC</p>			<p>Yellow to whitish-blue colonies, extremely mucoid</p> 	
<p><b><i>Proteus</i></b>                      Catalase + &amp; Ox -  <i>P. mirabilis</i> = 10% UTI                      Hydrolyse urea                      Swarm on plates                      API 20E                      Many AmpC</p>			<p>Translucent blue colonies</p> 	
<p><b><i>Enterobacter</i></b>                      Facultative anaerobes                      Catalase + &amp; Ox -                      Indole - &amp; VP +                      Citrate + &amp; ONPG +                      API 20E                      Inducible AmpC</p>				

<p><b>Citrobacter</b>  <i>C. freundii</i> = AmpC            VP - &amp; methyl-red +            Usually NLF            Catalase + &amp; Ox -            H<sub>2</sub>S + (can be confused with Salmonella)            API 20E</p>				<p><b>Citrate Test Results</b></p> <ul style="list-style-type: none"> <li>Simmon's Citrate agar utilizes sodium citrate as its sole carbon source</li> <li>Bromthymol blue is included as a pH indicator; the medium initially is green</li> <li>Organisms capable of using citrate as a carbon source turn the media "Prussian blue".</li> </ul> 
<p><b>Serratia</b> (prev. Kleb)            Red/pink pigment            Slow/late NLF            &amp; VP +            DNase +            Catalase + &amp; Ox -            API 20E            Many AmpC</p>				
<p><b>Salmonella</b>  <b>Typhi &amp; Paratyphi = C3</b>            Ox - Urease - NLF (blue)            API 20E  <b>Indole - Citrate + (same as Citrobacter)</b>            MacConkey = white            Selenite broth +            Tetrathionate broth +</p>				<p>DCA deoxycholate = yellow/colourless+dark centre (dc)            XLD = red +/- dc            SSA = colourless +/- dc            Hektoen = blue/green + black (H<sub>2</sub>S +)            Brilliant green = red/pink with brilliant red zones</p>
<p><b>Shigella</b>  <b>S. dysenteriae t1 = C3</b>            NLF (<i>S. sonnei</i> = late LF)  <b>Indole variable Citrate -</b>            H<sub>2</sub>S -            Stool smear stained with methylene blue for polymorphonuclear leucocytes</p>				<p>Positive leucocyte test indicated invasive diarrhoea/colitis = consider Shigella, Salmonella, Campylobacter, C. diff, idiopathic diarrhoea</p>

<p><b><i>Hafnia alvei</i></b>  (formerly <i>Enterobacter</i>)  API 20E  Catalase + &amp; Ox  Sensitivities similar to  <i>Enterobacter</i></p>				
<p><b><i>Pantoea agglomerans</i></b>  Catalase + &amp; Ox  API 20E  (used to be <i>Erwinia herbicola</i> or <i>Enterobacter agglomerans</i>)</p>				
<p><b><i>Edwardsiella tarda</i></b>  Can be mistaken for  <i>Salmonella</i> H<sub>2</sub>S + NLF  API 20E</p>				
<p><b><i>Morganella morganii</i></b>  VP – Indole + Urease +  Catalase + &amp; Ox  API 20E  Intrinsic AmpC</p>				
<p><b>Providencia</b>  <i>P. alcalifaciens</i>, <i>P.</i>  <i>stuartii</i>, <i>P. rettgeri</i>  Catalase + &amp; Ox  API 20E  Treat with carbapenems</p>				

1. *Pseudomonas aeruginosa*: Green colonies with typical matted surface and rough periphery
2. Enterococci: Small yellow colonies, about 0.5mm in diameter
3. *Staphylococcus aureus*: Deep yellow colonies, uniform in color
4. Coagulase Negative Staphylococci (CONS): Pale yellow colonies, more opaque than *Enterococcus faecalis*