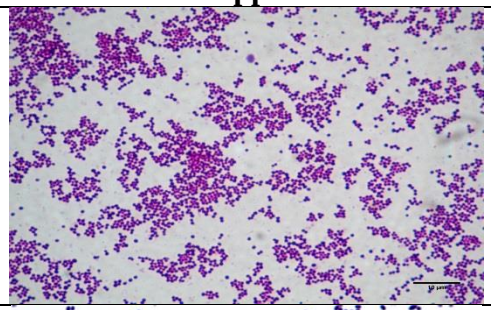
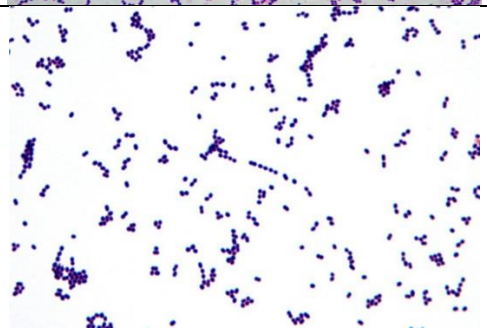
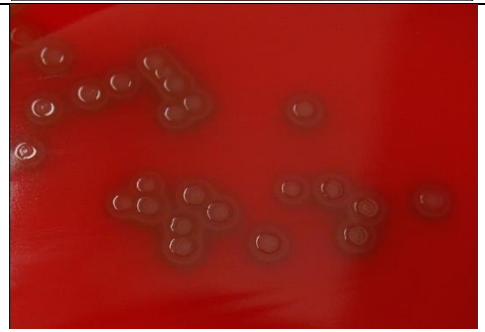
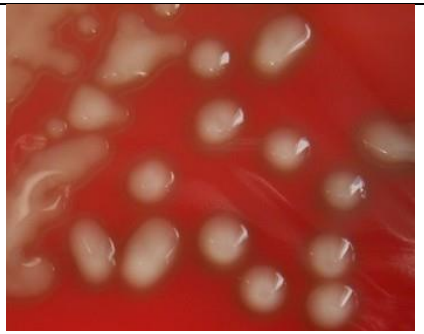
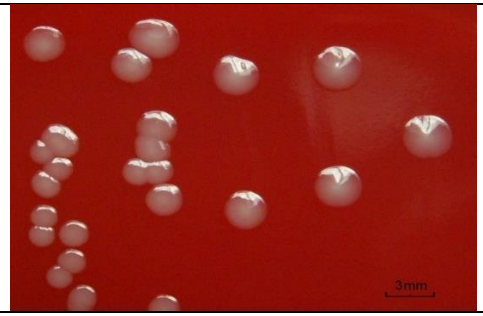
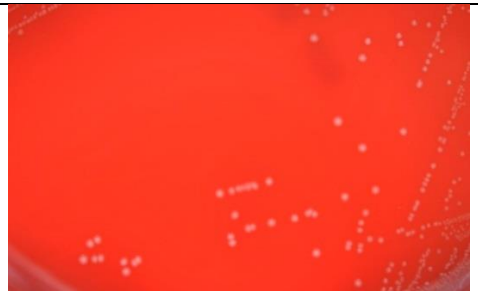
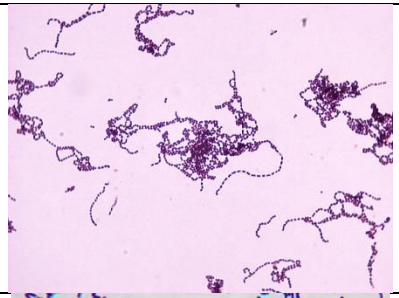
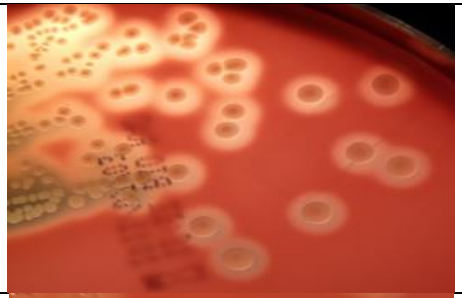
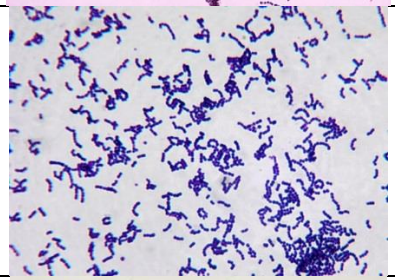
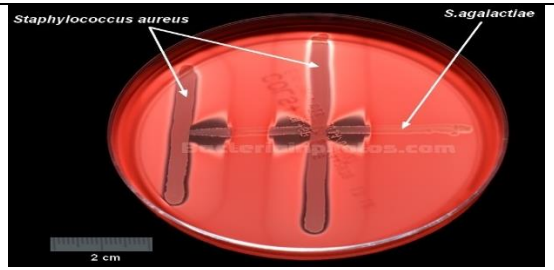
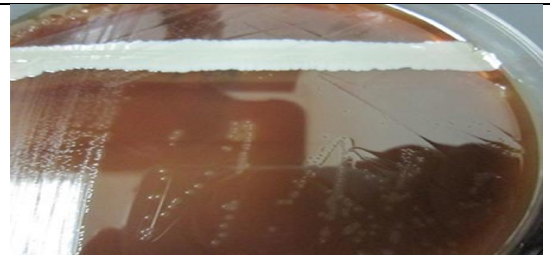
Bacterial Identification – Gram Positive Cocci

Organism	Gram Appearance	Plate Appearance	Other
Staphylococcus aureus GPC clusters Catalase positive Coagulase negative DNase positive API Staph			Oxacillin (MIC >2mg/L) Cefoxitin (MIC > 4mg/L) Conjugate vaccine Chromagenic agar (MRSA-ID) 7% NaCL (mannitol salt agar or broth)
Streptococcus pneumoniae GPC diplococci α-haemolysis on BA Optochin sensitive Catalase negative 10% bile salt positive API strep Penicillin MIC>0.1≤1 = I Penicillin MIC≥2 = R			
Enterococci Cigar shaped GPC pairs/chains Facultative anaerobes 6.5% NaCL Hydrolyse aesculin PYR positive Group D Lancefield			Ampicillin *E. faecalis* Vancomycin *E. faecium*

Streptococcus bovis Lancefield group D PYR negative API Rapid Strep Biotype 1 (endocarditis & gut malignancy)			Review for colonic malignancy & endocarditis
Streptococcus pyogenes Facultative anaerobes (O haemolysin only haemolysis when ~~O2~~, haemolysin S = both) β-haemolysis Optochin resistant Bacitracin sensitive Bile solubility negative			
Streptococcus agalactiae CAMP positive (right) on **SHEEP** blood agar GPC – usually capsulate Small zone of β-haemolysis Bacitracin resistant Lancefield Group B			
Leuconstoc Catalase negative GPC/cocco-bacilli Plants/dairy products/wine			Intrinsically resistant to glycopeptides as walls finish in D-alanine-D-lactate Give penicillin/ampicillin

<table>
<tr>
<td>Abiotrophia
Nutritionally variant Strep
Need pyridoxal/thiol supplement for growth
Appear as satellite orgs around S. aureus (both pics)
Think endocarditis</td>
<td>  </td>
<td>  </td>
<td>  </td>
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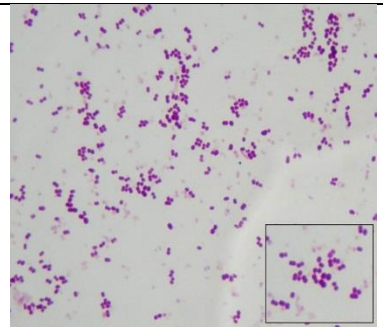
<td>Peptostreptococcus

Obligate anaerobe

API 20 A</td>
<td>  </td>
<td>  </td>
<td>
<table>
<tr><th>Code</th><th>Antibiotic</th><th>Content</th><th>Colour Code</th></tr>
<tr><td>E</td><td>Erythromycin</td><td>60µg</td><td>Red</td></tr>
<tr><td>RP</td><td>Rifampicin</td><td>15µg</td><td>Dark Red</td></tr>
<tr><td>CO</td><td>Colistin sulphate</td><td>10µg</td><td>White</td></tr>
<tr><td>PG</td><td>Penicillin G</td><td>2 units</td><td>Pink</td></tr>
<tr><td>K</td><td>Kanamycin</td><td>1000µg</td><td>Salmon</td></tr>
<tr><td>VA</td><td>Vancomycin</td><td>5µg</td><td>Blue</td></tr>
</table>
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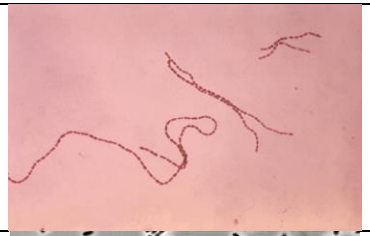
<tr>
<td>Coprococcus

Obligate anaerobe

API 20 A</td>
<td>  </td>
<td></td>
<td rowspan="2">MAST rings for anaerobic identification (see above for antimicrobial)</td>
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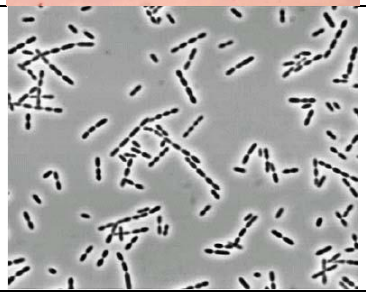
<td>Ruminococcus

Obligate anaerobe

API 20 A</td>
<td>  </td>
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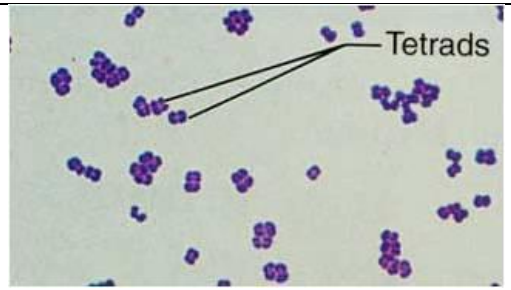
<td>Sarcina

Obligate anaerobe

API 20 A</td>
<td> 
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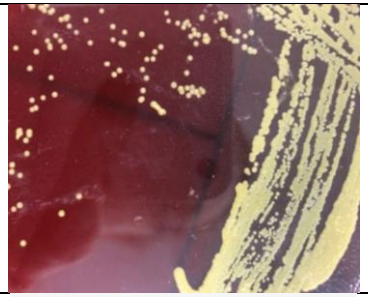
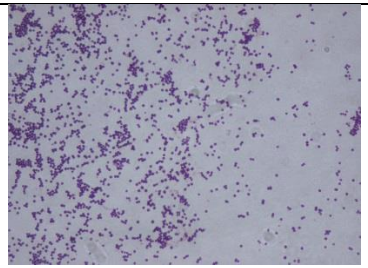
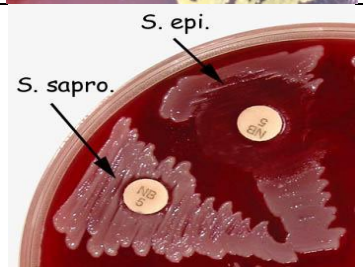
<td>  </td>
<td rowspan="2">Strains are characterised according to the following table:

<table>
<tr><th>Test Organisms</th><th colspan="6">Antimicrobial</th></tr>
<tr><th></th><th>E</th><th>RP</th><th>CO</th><th>PG</th><th>K</th><th>VA</th></tr>
<tr><td>Bacteroides fragilis group ATCC® 25285</td><td>S</td><td>S</td><td>R</td><td>R</td><td>R</td><td>R</td></tr>
<tr><td>Prevotella melaninogenica/oralis</td><td>S</td><td>S</td><td>S*</td><td>S*</td><td>R</td><td>R</td></tr>
<tr><td>Porphyromonas spp.</td><td>S</td><td>S</td><td>R</td><td>S*</td><td>R*</td><td>S*</td></tr>
<tr><td>Bacteroides ureolyticus ATCC® 33387</td><td>S</td><td>V</td><td>S</td><td>S</td><td>S</td><td>R</td></tr>
<tr><td>Fusobacterium mortiferum/varium F. varium ATCC® 27725</td><td>R</td><td>R</td><td>S</td><td>S</td><td>S</td><td>R</td></tr>
<tr><td>Other Fusobacteria</td><td>R*</td><td>V</td><td>S</td><td>S</td><td>S</td><td>R</td></tr>
<tr><td>Gram Positive cocci</td><td>S</td><td>S</td><td>R</td><td>S*</td><td>V</td><td>S</td></tr>
<tr><td>Clostridium spp. e.g Clostridium perfringens ATCC® 13124</td><td>S</td><td>S</td><td>R</td><td>S*</td><td>V</td><td>S</td></tr>
<tr><td>Gram Positive bacilli (NSGPG)</td><td>S</td><td>S*</td><td>R</td><td>S*</td><td>V</td><td>S</td></tr>
<tr><td>Gram Negative cocci</td><td>S</td><td>S</td><td>S</td><td>S</td><td>S</td><td>R</td></tr>
</table>
S = Sensitive S* = Majority sensitive
R = Resistant R* = Majority resistant
V = Variable NSGPG = Non-Sporing Gram Positive Genera</td>
</tr>
<tr>
<td>Streptococcus saccharolyticus

Obligate anaerobe
Novobiocin resistant

API 20 A</td>
<td>  </td>
<td> 
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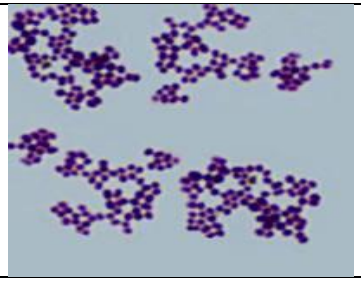
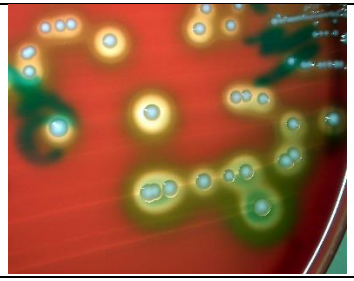
<tr>
<td>Aerococcus
Catalase negative
May form tetrads

Biochemically similar to α-haemolytic strep</td>
<td>  </td>
<td>  </td>
<td>Urogenic bacteraemia +/- endocarditis
Usually susceptible to penicillins
Resistant to sulphonamides + aminoglycosides</td>
</tr>
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