practical 2.: STAPHYLOCOCCUS

1. Prepare a heat fixed smear of the culture of *S.aureus.* (Gram staining, microscopy).

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2. Prepare a heat fixed smear of the culture of *S.aureus.* and *S.epidermidis* (mixed smear), (Gram staining, microscopy).

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3. Stain fixed smear prepared from the clinical sample (pus, Gram staining, microscopy).

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4. In vitro cultivation of staphylococci - *S.aureus* a *S.epidermidis* (blood agar)

colony	size	color	morphology	haemolysis
S. aureus				
S. epidermidis				

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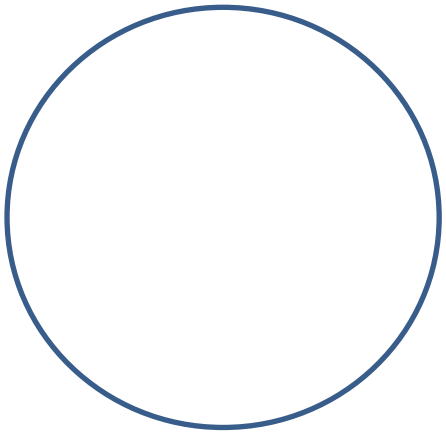
5. Biochemical properties of *S.aureus* a *S.epidermidis* (MANNITOL SALT agar).



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6. Catalase reaction.

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7. Slide coagulase test.

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8. Tube coagulase test.

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9. Biochemical identification of staphylococci – STAPHYTEST 16 (principle, demonstration)

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10. Staphylococci - ATB susceptibility.

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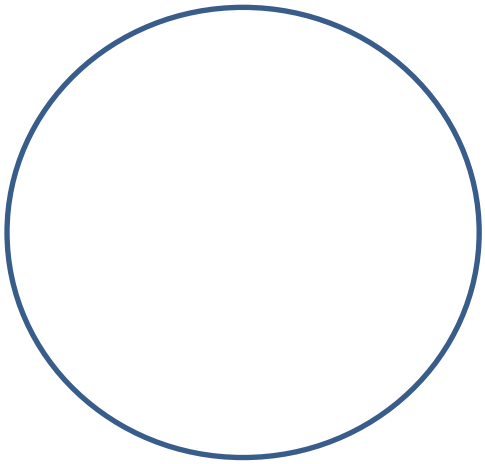
Practical 3. : STREPTOCOCCI

1. Prepare a heat fixed smear of the broth culture of *S.pyogenes* (Gram staining, microscopy).



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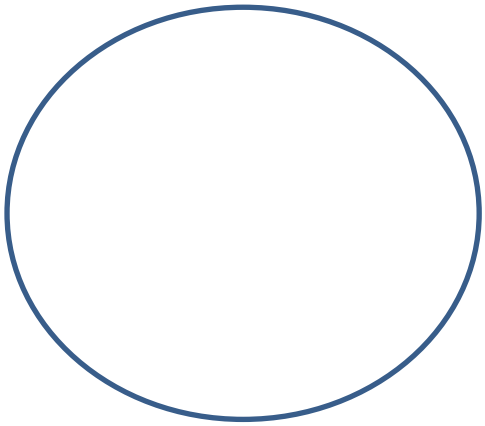
1. Prepare a heat fixed smear of the culture of *S. pneumoniae* (Gram staining, microscopy).



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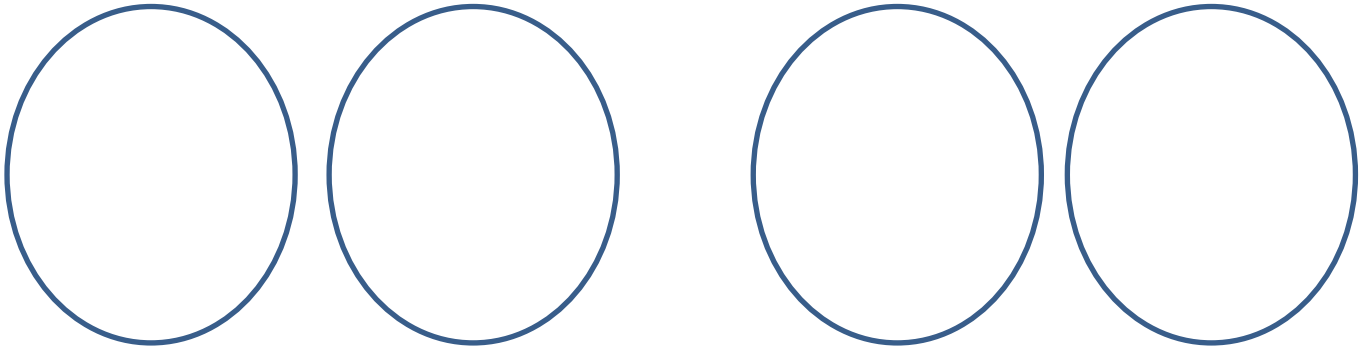
2. Streptococcus – in vitro cultivation (blood agar).



S .pyogenes *S. agalactiae* *S. salivarius* *S. pneumoniae*

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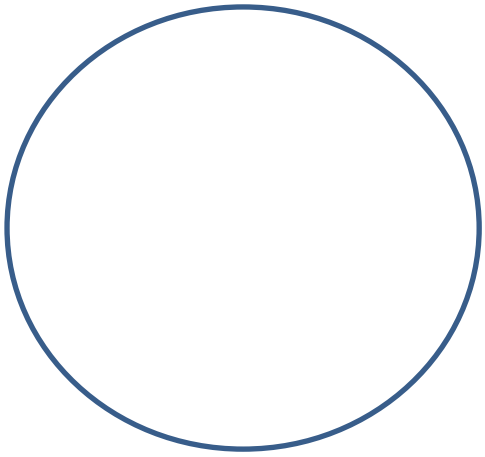
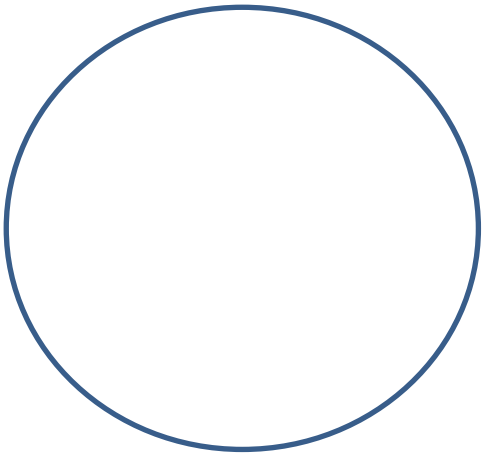
colony	size	color	morphology	haemolysis
S. pyogenes				
S. agalactiae				
S .salivarius				
S. pneumoniae				

3. Bacitracin test (*S. pyogenes, S. agalactiae*).



S .pyogenes



S. agalactiae

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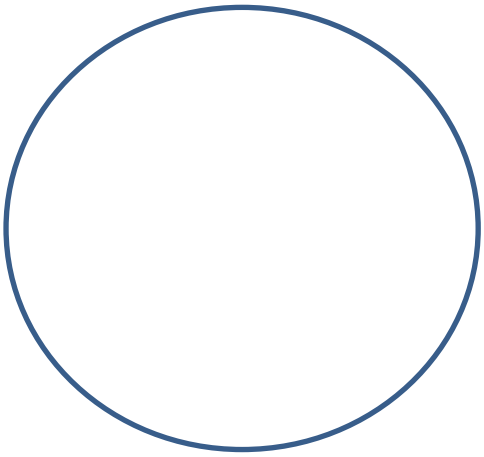
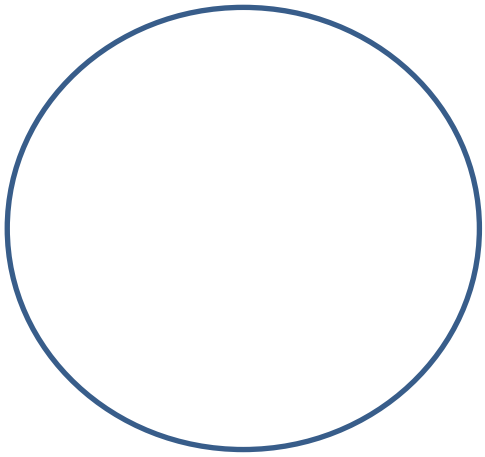
4. CAMP test (*S. pyogenes, S. agalactiae*).



S .pyogenes



S. agalactiae

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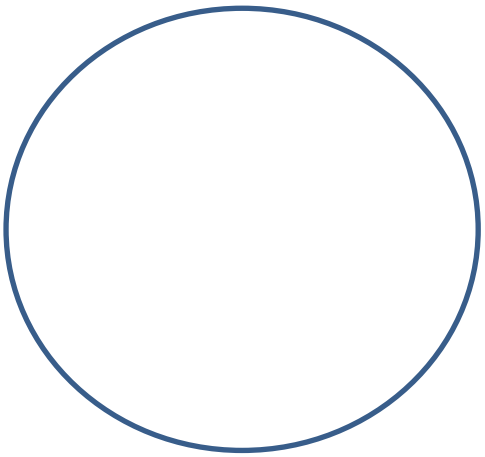
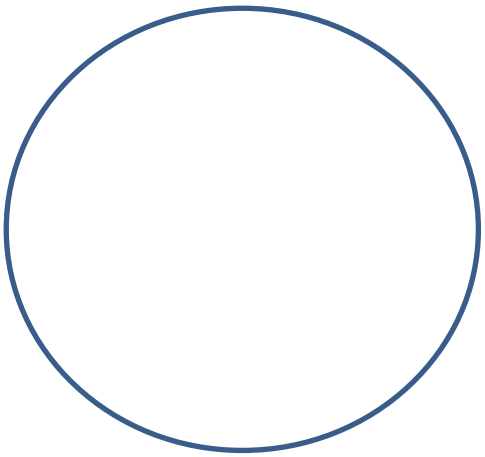
6. Optochin test (*S. salivarius, S. pneumoniae*).



S. salivarius



S. pneumoniae

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7. Bile solubility test (*S. pneumoniae*).

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7. Antistreptolysin O (principle, results interpretation).

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8. C-reactive protein (CRP).

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9. Streptococci – ATB susceptibility.

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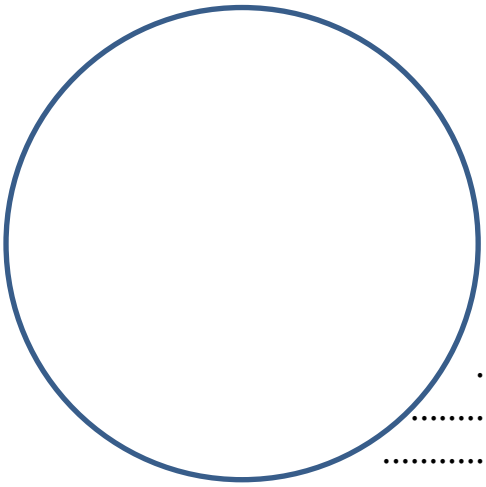
Practical 4.: NEISSERIA, HAEMOPHILLUS

1. Stain fixed smear prepared from the clinical sample (pus, Gram staining). (*N. gonorrhoeae*).



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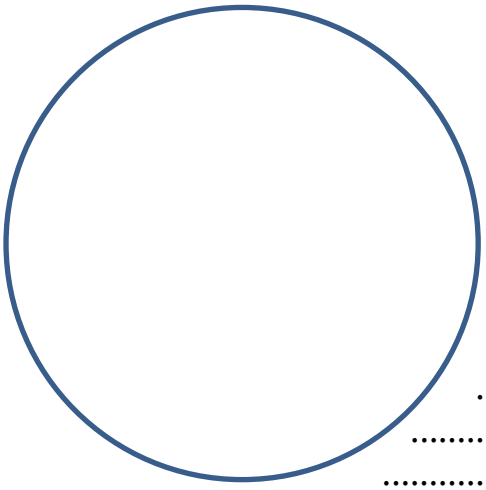
2. Prepare a heat fixed smear of the culture of *H. influenzae* (Gram staining).



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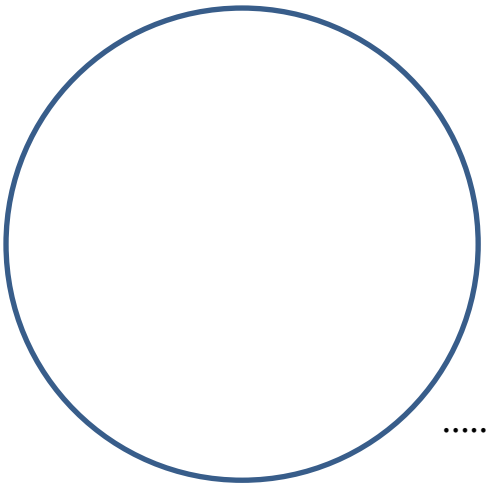
3. Microscopy – fixed smear - clinical sample (cerebrospinal fluid, *N. meningitidis*).



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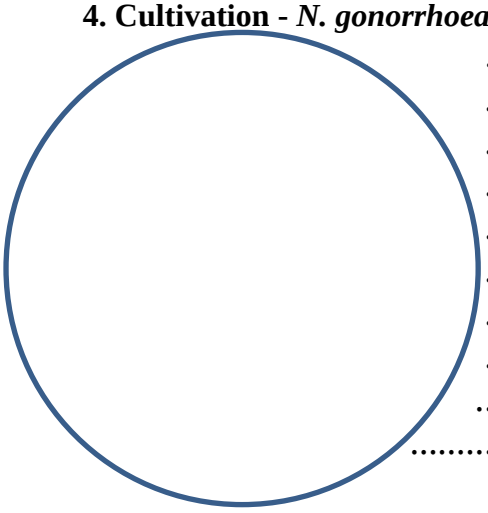
4. Cultivation - *N. gonorrhoeae* - Chocolate agar (CHOC).



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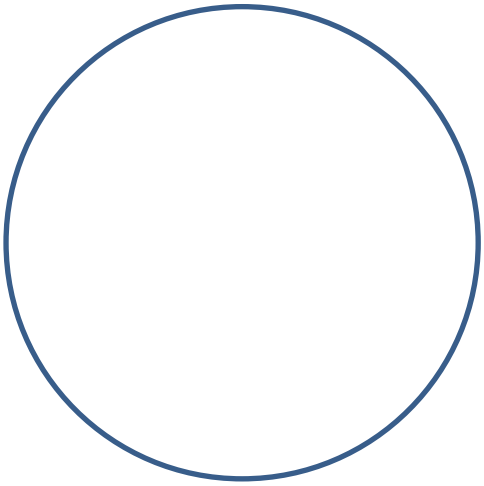
5. Cultivation- *H. influenzae* – blood agar, Chocolate agar (CHOC).



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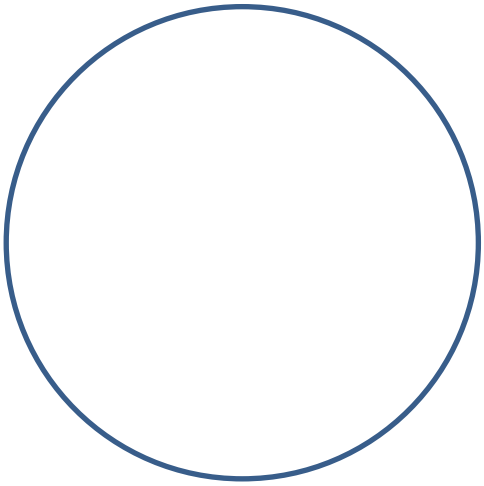

CHOC

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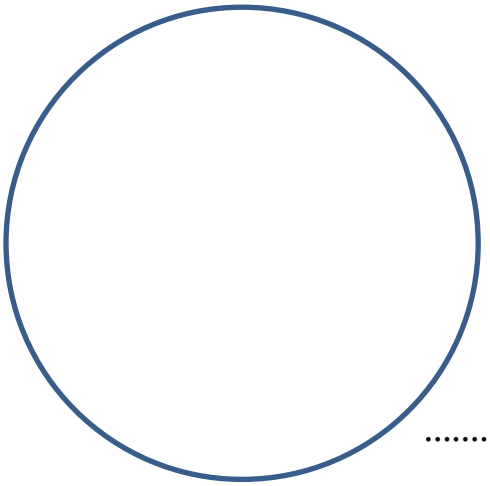
6. Cultivation – swab of tonsils, blood agar.



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7. Catalase test - *N. gonorrhoeae.*

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8. Oxidase test

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9. Growth factors - *H. influenzae, H. parainfluenzae.*

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10. ATB susceptibility - *H. influenzae* and *N. gonorrhoeae.*

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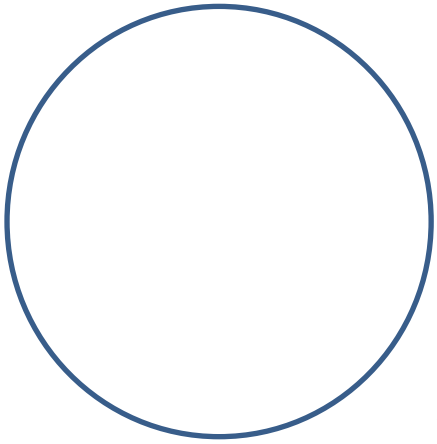
Practical 5.: ENTEROBAKTERIACEAE

1. Prepare a heat fixed smear of the culture of *E. coli* (Gram staining).



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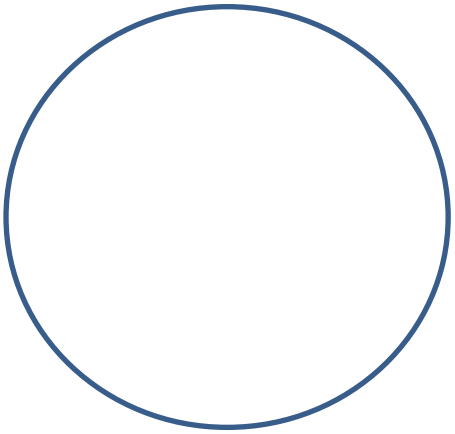
2. Prepare a heat fixed smear of the culture of *Salmonella sp.* (Gram staining).



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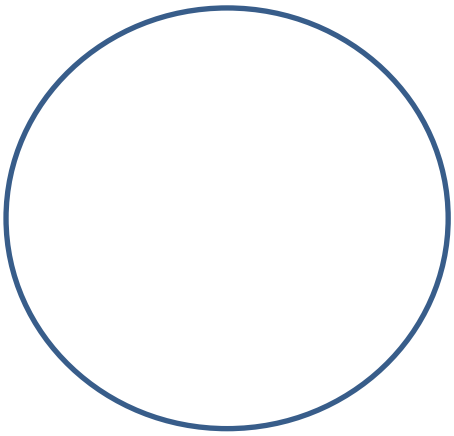
3. Prepare a heat fixed smear of the culture of *K. pneumoniae* (Burri ink staining).



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4. Cultivation - *E. coli, K. pneumoniae, Salmonella sp., Shigella. sp*. dan *P. vulgaris* – blood agar, Endo agar (EA), Deoxycholatcitrate agar (DCA).

Blood agar	*E.coli*	*K. pneumoniae*	*Shigella sp.*	*Salmonella sp.*	*P. vulgaris*	*P. mirabilis*
colony						
Endo agar	*E.coli*	*K. pneumoniae*	*Shigella sp.*	*Salmonella sp.*	*P. vulgaris*	*P. mirabilis*
Lactose ferm.						
color						
DC agar	*E.coli*	*K. pneumoniae*	*Shigella sp.*	*Salmonella sp.*	*P. vulgaris*	*P. mirabilis*
Lactose ferm.						
H_2S						

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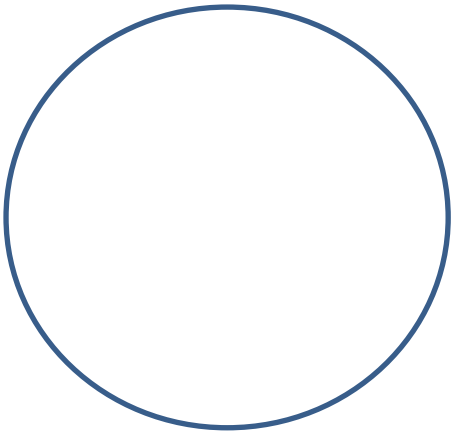
5. Rauss phenomenon.



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6. Biochemical properties - *E. coli, K. pneumoniae, Salmonella sp., Shigella. sp., P. mirabilis,* and *P. vulgaris* (Triple Sugar Iron Agar - TSI).

	E.coli	*K. pneumoniae*	*Shigella sp.*	*Salmonella sp.*	*P. vulgaris*	*P. mirabilis*
dextrose, lactose, and sucrose fermentation						
gas						
hydrogen sulfide production						

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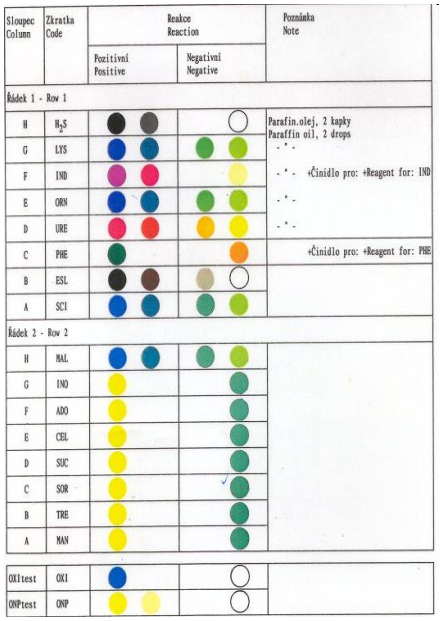
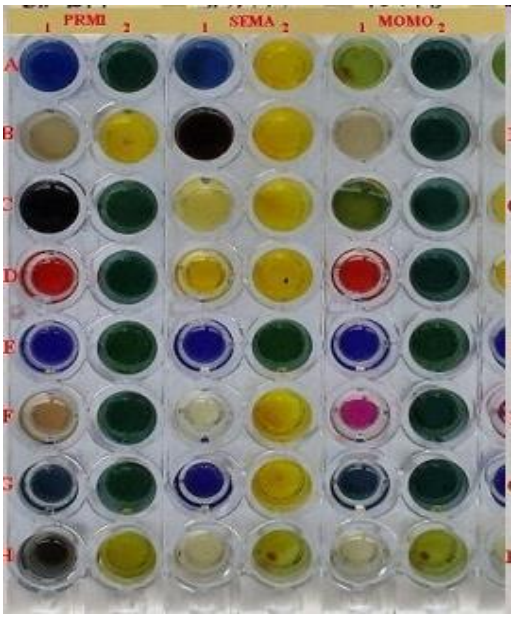
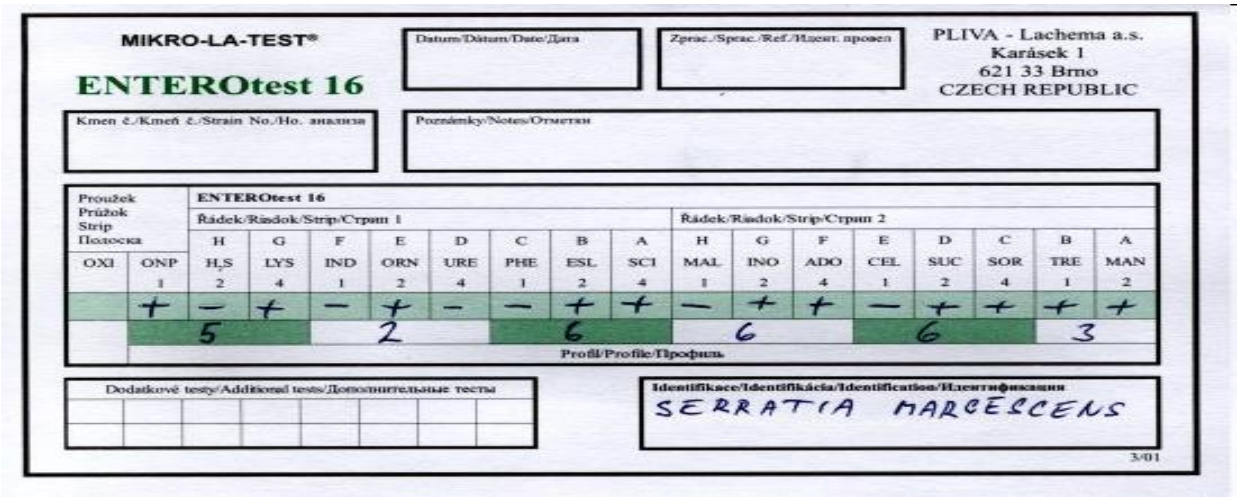
7. Enterobacteriaceae – Biochemical activity testing (enterotest).



Sloupec Column	Zkratka Code	Reakce Reaction: Pozitivní Positive	Reakce Reaction: Negativní Negative	Poznámka Note
Řádek 1 - Row 1				
H	H_2S	● ●	○	Parafin.olej, 2 kapky Paraffin oil, 2 drops
G	LYS	● ●	● ●	- " -
F	IND	● ●	●	- " - +Činidlo pro: +Reagent for: IND
E	ORN	● ●	● ●	- " -
D	URE	● ●	● ●	- " -
C	PHE	●	●	+Činidlo pro: +Reagent for: PHE
B	ESL	● ●	● ○	
A	SCI	● ●	● ●	
Řádek 2 - Row 2				
H	MAL	● ●	● ●	
G	INO	●	●	
F	ADO	●	●	
E	CEL	●	●	
D	SUC	●	●	
C	SOR	●	●	
B	TRE	●	●	
A	MAN	●	●	
OXItest	OXI	●	○	
ONPtest	ONP	● ●	○	





MIKRO-LA-TEST®

ENTEROtest 16

Datum/Dátum/Date/Дата

Zprác./Sprác./Ref./Изслед. проведен

PLIVA - Lachema a.s.
Karásek 1
621 33 Brno
CZECH REPUBLIC

Kmen č./Kmeň č./Strain No./Но. анализа

Poznámky/Notes/Отметки

Proužek Prúžok Strip Полоска	ENTEROtest 16															
	Řádek/Riadok/Strip/Стрип 1								Řádek/Riadok/Strip/Стрип 2							
	H	G	F	E	D	C	B	A	H	G	F	E	D	C	B	A
OXI	ONP	H_2S	LYS	IND	ORN	URE	PHE	ESL	SCI	MAL	INO	ADO	CEL	SUC	SOR	TRE	MAN
	1	2	4	1	2	4	1	2	4	1	2	4	1	2	4	1	2
	+	−	+	−	+	−	−	+	+	−	+	+	−	+	+	+	+
	5			2			6			6			6			3	

Profil/Profile/Профиль

Dodatkové testy/Additional tests/Дополнительные тесты

Identifikace/Identifikácia/Identification/Идентификация

SERRATIA MARCESCENS

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8. Serotypisation of *E. coli* (polyvalent and monovalent sera, principle).

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9. Widal reaction.

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10. ATB susceptibility testing – *E. coli, K. pneumoniae, Salmonella sp., Shigella. sp., P. mirabilis,* and *P. vulgaris*

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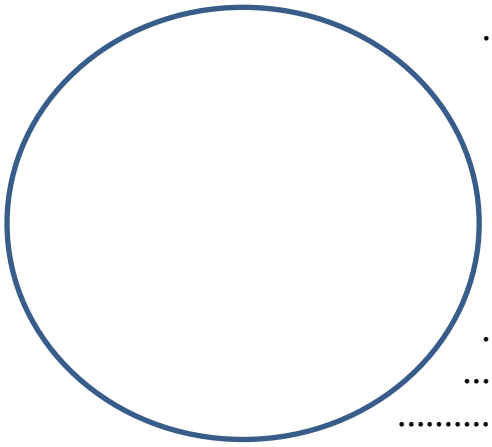
Practical 6.: A. Grampositive rods.

B. *Pseudomonas aeruginosa*

1. Prepare a heat fixed smear of the culture of *Pseudomonas aeruginosa* (Gram staining).



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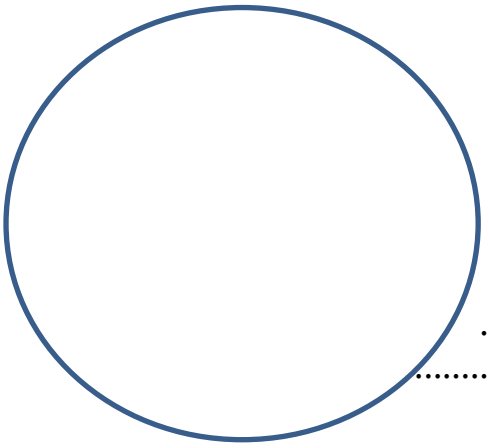
2. Stain fixed smear of the culture of *B. anthracis* (Gram staining).



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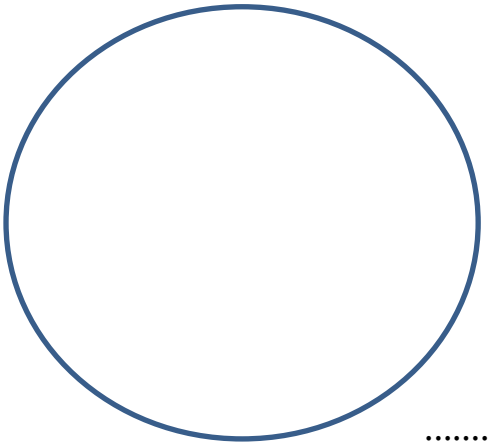
3. Prepare a heat fixed smear of the culture of *B.cereus* (Gram staining).



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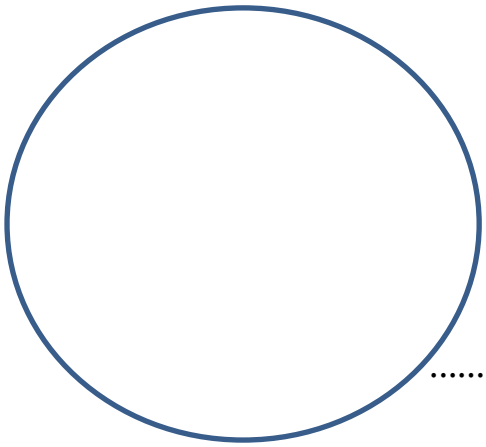
4. Stain fixed smear of the culture of *B. anthracis* (Wirtz-Conklin staining procedure).



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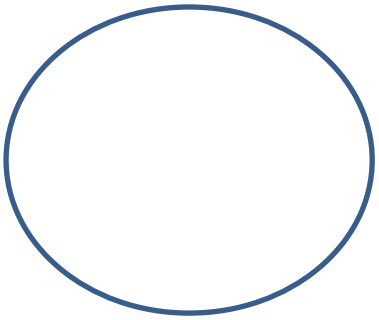
5. Cultivation - *Pseudomonas aeruginosa* (blood agar, DC agar).



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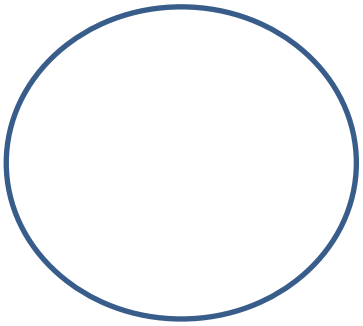

DC

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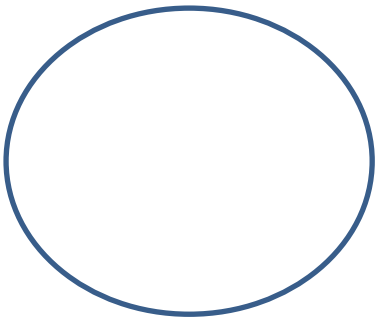
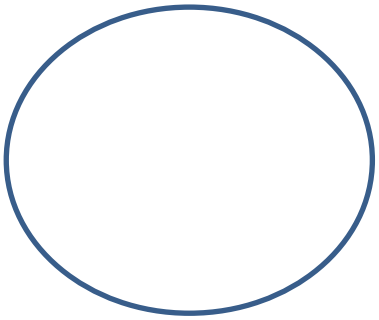
6. Cultivation - *B. anthracis, B.cereus* (blood agar).



B. anthracis



B.cereus

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7. Biochemical activity testing - *Pseudomonas aeruginosa* and nonfermentative G-negative rods (TSI agar, oxidase test).

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9. ATB susceptibility - *Pseudomonas aeruginosa, B. anthracis* .

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Practical 7.: CORYNEBACTERIUM, BORDETELLA

1. Stain fixed smear of the culture of *C. diphteriae* (Gram staining).

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2. Prepare a heat fixed smear of the culture of *C. pseudodiphteriticum* (Gram staining).

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3. Stain fixed smear of the culture of *C. diphteriae* (Albert staining).

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4. Stain fixed smear of the culture of *B. pertussis* (Gram staining).

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5. Cultivation - *C. diphteriae* and *C. pseudodiphteriticum* (blood agar, Tellurite agar).

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6. Cultivation - *B. pertussis* (Bordet - Gengou agar).

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7. Toxigenicity of *C. diphteriae* (in vitro- immunodiffusion, in vivo).

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8. ATB susceptibility - *B. pertussis, C. diphteriae* a *C. pseudodiphteriae*.

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Practical 8.: ANAEROBIC BACTERIA, SPIROCHETES.

1. **Cultivation media for anaerobic bacteria.**

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2. **Anaerobes - specimen colection and transport of biologic material.**

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3. **Anaerobic culture methods:**

   a. **Biological (*Serratia marcescens*):**

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   b. **Physical:**

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c. **Chemical:**

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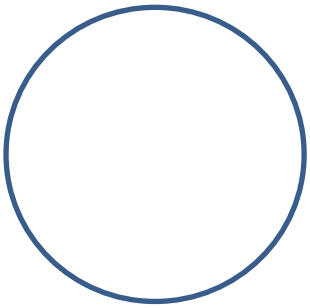
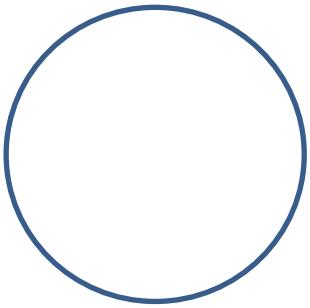
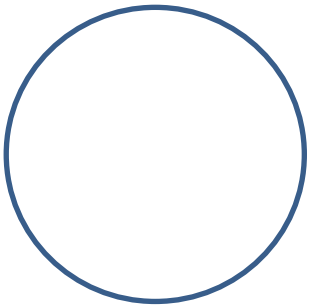
4. Anaerobic bacteria : microscopy (Gram staining).



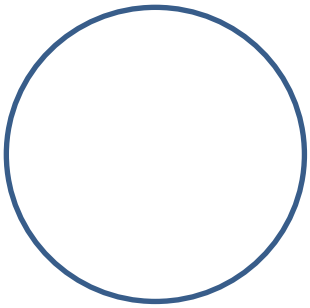
Propionibacterium acnes



Clostridium difficile



Clostridium perfringens



Peptostreptococcus sp.

5. Laboratory diagnosis of syphilis (nontreponemal and treponemal tests).

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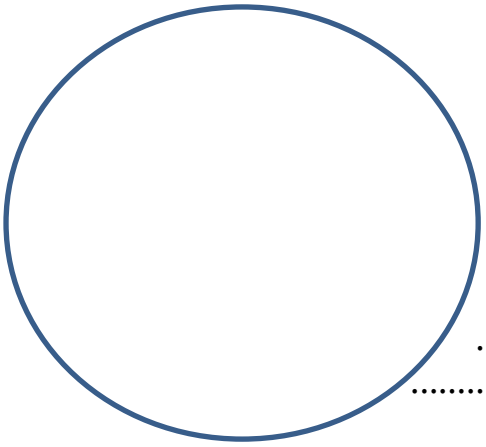
Practical 9.: MYCOBACTERIUM

1. Stain fixed smear of the culture of *M. tuberculosis* (Ziehl-Neelsen staining).



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2. *M. tuberculosis* in vitro cultivation (liquid an solid cultivation media).

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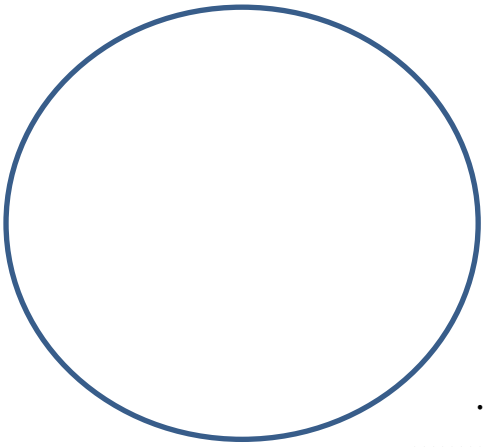
3. *M. tuberculosis* (fluorescent microscopy).



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Practical 10.: VIROLOGY

1. Laboratory diagnosis of viral diseases – direct methods (electron microscopy, virus isolation).

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2. Laboratory diagnosis of viral diseases – indirect methods (serologic diagnostic methods).

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Practical 11.: PARASITOLOGY

1. Specimen colection, transport of biological materials.

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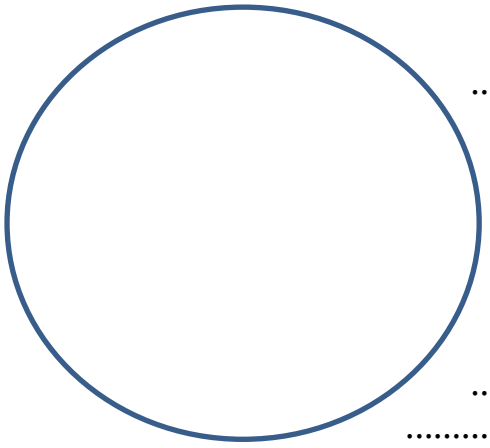
2. *Enterobius vermicularis* (Pinworm) – microscopy (eggs).



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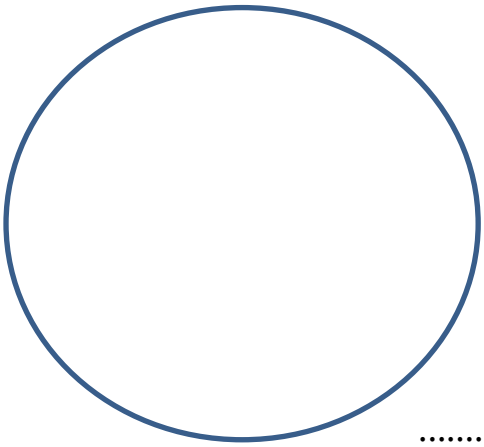
3. Microscopy (biologic material – stool).



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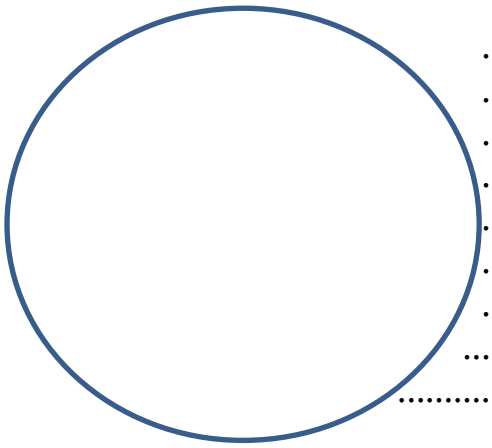
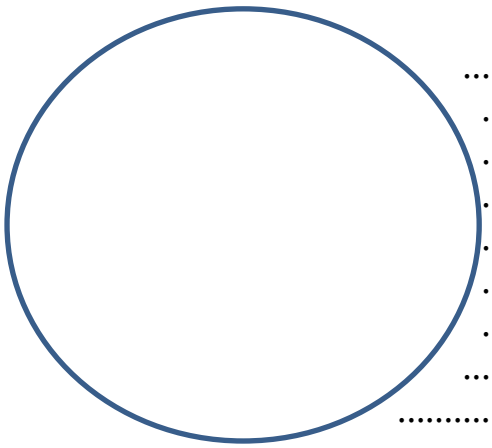
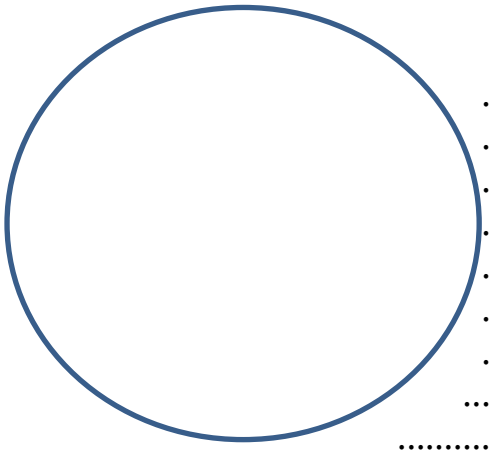
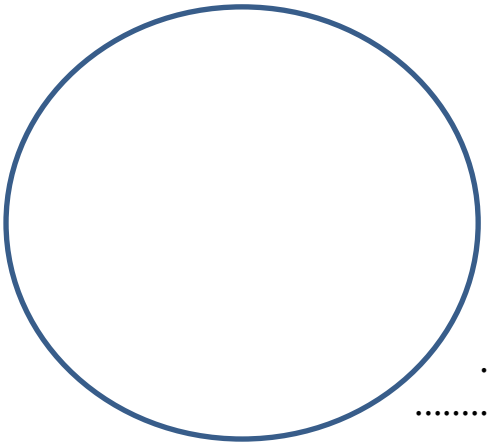


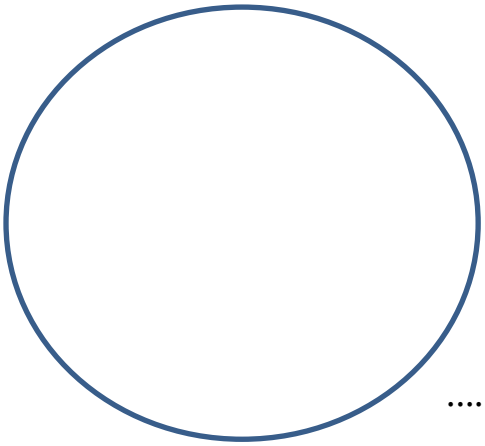






Practical 12.: FUNGI

1. Prepare a heat fixed smear of the culture of *C. albicans* (Gram staining).



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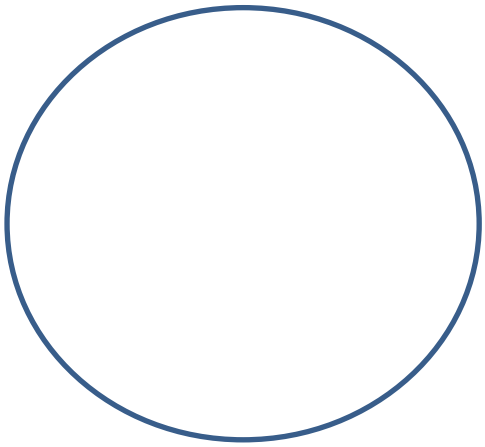
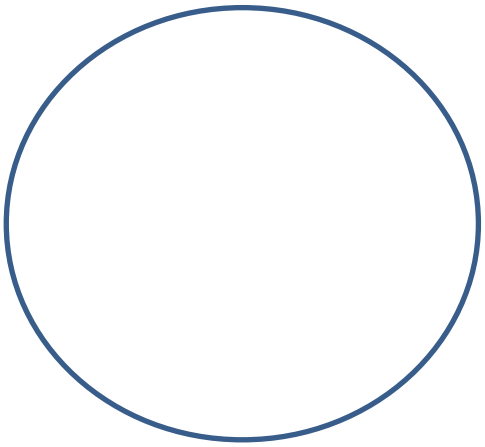
2. Culture – yeasts and molds (*Candida sp.*, *Aspergillus*, Sabouraud agar).



Candida



Aspergillus

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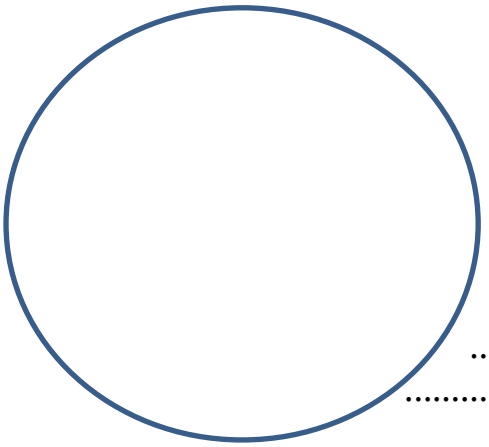
3. Culture and microscopy - *C. albicans* on rice agar.



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