MICROBIOLOGY

&

PARASITOLOGY

MTLE BOARD EXAM RECALLS

COMPILED RECALLS

MTLE *2022* RECALLS

MTLE *MARCH* *2023* RECALLS

MTLE *AUGUST* *2023* RECALLS

MTLE *MARCH* *2024* RECALLS

MTLE *AUGUST* *2024* RECALLS

STUDY QUESTIONS

500 ITEMS

2022 - 2024

MTLE 2022 RECALLS

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1. What is the infective stage of Leishmania spp. to humans?
a). Promastigote
b). Amastigote
c). Trypomastigote
d). Sporozoites

2. The third Taenia spp.:
a) T. saginata
b) T. taeniaeformis
c) T. crassiceps
d)T. asiatica

3. Which of the following media identifies species of aspergillus?
a. Urease medium
b. Rice agar
c. Czapek's agar
d. Blood agar

4. This presumptive test for candida uses serum.
a. Germ tube test
b. latex agglutination
c. hair perforation test
d. chlamydospore test

5. In order to demonstrate of the encapsulated yeast Cryptococcus neoformans in wet preparations of patient specimens, what should be used?
a. methylene blue
b. india ink
c. malachite green
d. safranin

6. It is the smallest RNA virus:
a. Enterovirus
b. Picornavirus
c. cytomegalovirus
d. togavirus

7. Which of the following produces macroconidia that are large, multicellular and club- shaped with smooth walls?
a. fonsecaea pedrosoi
b. microsporum audouinii
c. trichophyton rubrum
d. epidermophyton floccosum

8. Corn meal agar test is used to identify Candida Albicans through the organism's production of:
a. chlamydospore
b. urease
c. germ tube
d. inositol

9. Which of the following parasite larva can be isolated in sputum?
a. paragonimus westermani
b. entamoeba histolytica
c. taenia saginata
d. ascaris lumbricoides

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10. Proper collection of a sample for recovery of Enterobius vermicularis includes collecting:
a. A 24-hour urine collection
b. A first morning stool with proper preservative
c. Capillary blood
d. A scotch tape preparation from the perianal region

11. Heart-lung migration except:
a. roundworm
b. whipworm
c. hookworm
d. seatworm

12. Rose gardener's disease:
a. sporotrichosis
b. histoplasmosi
c. coccidiodomycosis
d. blastomycosis

13. Which of the following is diagnostic for chromoblastomycosis?
a. flowerette conidia
b. asteroid body
c. schlerotic body
d. germ tube

14. Enteroviruses can be differentiated from rhinoviruses by:
a. size
b. either stability
c. ribonuclease treatment
d. acid resistance

15. Second intermediate host of paragonimus westermani:
a. snail
b. fish
c. freshwater crab
d. vegetation

16. Diphyllobotrium latum adult resembles the adult form of:
a. paragonimus westermani
b. echinococcus granulosus
c. taenia saginata
d. spirometra

17. Cytomegalovirus isolation is best accomplished using:
a. monkey kidney cells
b. A549 cells
c. human embryonic fibroblasts
d. embryonated hen's eggs

18. The definitive host to plasmodium is the:
a. Tsetse fly (Glossina)
b. Sandfly (Phlebotomus)
c. Mosquito (Female Anopheles)
d. Reduviid bug (Male Triatoma)

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19. Diagnosis of typhoid fever can be confirmed best by culture of:
a. stool
b. urine
c. bone marrow
d. blood

20. For the antibiotic susceptibility testing of group A beta- hemolytic streptococci, how many units of bacitracin is used?
a. 10.00
b. 0.02-0.04
c. 5.00
d. 1.00- 2.00

21. which diphtheroid has the same morphology as C. Diphtheriae on blood agar plate (BAP)?
a. C. ulcerans
b. C. minutissimum
c. jeikeium
d. urealyticum

22. Which staphylococcus spp. is resistant to 5 ug novobiocin
a. S. aureus
b. S. epidermidis
c. S. saprophyticus
d. S. pyogenes

23. Which of the following is a suitable transport medium for bacteria and virus?
a. phosphate buffered sucrose (2SP)
b. hank's balanced salt solution
c. eagles minimum essential medium
d. stuart's medium

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1. The only known human tapeworm with an operculum is:
a). Diphyllobothrium latum
b). Hymenolepis nana
c). Giardia lamblia
d). Schistosoma haematobium

2. Form spores except:
a) B. anthracis
b) B. subtilis
c) B. cereus
d) B. fragilis *(Bacteroides fragilis)*

3. Responsible for souring of milk:
Lactobacillus acidophilus

4. If the ova of this parasite are ingested by humans, the oncosphere form can migrate through the body via the bloodstream, resulting in the condition known as cysticercosis. Which of the following is correct?
a) Taenia solium
b) Entamoeba histolytica
c) Hymenolepis nana
d) Clonorchis sinensis

5. Ova recovered from the stool are routinely used to diagnose infections caused by all of the following except?
a) Necator americanus
b) Ascaris lubricoides
c) Trichuris trichiura
d) Strongyloides stercoralis

6. Gram (-) Diplococci, Growth on CAP and BAP
a) N. meningitidis
b) N. gonorrhoea

7. In T. solium infection, man serves as:
both the intermediate & definitive host

8. Mode of transmission of P. westermani:
ingestion of raw/undercooked crabs or crayfish

9. Beta hemolysis – **complete destruction of rbcs**
Alpha hemolysis – partial destruction of rbcs
Gamma – none

10. Quebec colony counter:
a) bright background
b) dark background
c) fluorescent

11. To read the hemolytic reaction on a blood agar plate accurately, the technologist must hold the plate up to the light and observe the plate with the light coming from behind
(i.e., transmitted light).

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12. Review:

Specimen	Container	Patient Prep	Special Instructions	Transport	Storage before processing
Superficial wound	Aerobic swab moistened with Stuart's or Amie's medium	Wipe area with sterile saline or 70% alcohol	Aspirate, if possible, swab along leading edge of wound	<2 hrs	24 hrs/RT
Deep wound	Anaerobic transporter	Wipe area with sterile saline or 70% alcohol	Aspirate material from wall or excise tissue	<2 hrs	24 hrs/RT
Blood/BM aspirate	Blood culture media set or Vacutainer tube with SPS	Disinfect site with 70% alcohol	• Draw blood at time of febrile episode; • Draw two sets from right and left arms; • Do not draw more than three sets in a 24-hr period; • Draw: 20 mL/set (adults) or 1-20 mL/set (pediatric) depending on patient's weight; or per manufacturer's instructions	Within 2 hrs/RT	<2 hrs/RT Must be incubated at 37°C on receipt in laboratory
Amniotic, abdominal, Ascites (peritoneal), bile, joint (synovial), pericardial, pleural	Sterile, screwcap tube / anaerobic transporter / direct inoculation into blood culture bottles	Disinfect skin with iodine	Needle aspiration	<15 min	<24 hrs/RT Plate as soon as received. Incubate blood culture bottles at 37°C on receipt <24 hrs/ 4°C: Pericardial fluid & fluids for fungal cultures
Bone	Sterile, screwcap container	Disinfect skin before surgical procedure	Take sample from affected area for biopsy.	Immediately/ RT	Plate as soon as received.
CSF	Sterile, screwcap tube	Disinfect skin with iodine/ chlorhexidi ne	Consider rapid testing (e.g., Gram stain; cryptococcal antigen)	<15 min	<24 hrs Routine incubation at 37°C EXCEPT for viruses, which can be held at 4°C for up to 3 days
Corneal scrapings	Bedside inoculation of BHI 10%			<15 min/ RT	<24 hrs/RT Must be incubated at 28°C (SDA) or 37°C

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12. Review: Specimen collection

Specimen	Container	Patient Prep	Special Instructions	Transport	Storage before processing
Gastric aspirate	Sterile, screwcap tube	Collect in early AM before patient eats or gets out of bed	Most gastric aspirates are on infants or for AFB	<15 min/ RT	<24 hrs/4°C Must be neutralized with sodium bicarbonate within 1 hr of collection
Gastric biopsy	Sterile, screwcap tube		Rapid urease test or culture for Helicobacter pylori	<1 hr/RT	24 hrs/4°C
Rectal swab	Swab placed in enteric transport medium		Insert swab 1-1.5 cm past anal sphincter; feces should be visible on swab	<2 hrs/RT	<24 hrs/RT
Stool (feces) routine culture	Clean, leakproof container Transfer feces to enteric transport medium (Cary-Blair) if transport will exceed 1 hr		Routine culture should include Salmonella, Shigella, and Campylobacter; specify Vibrio, Aeromonas, Plesiomonas, Yersinia, Escherichia coli O157:H7, if needed.	24 hrs/ RT in holding media Unpreserved <1 hr/RT	24 hrs/4°C <48 hrs/RT or 4°C
O&P	O&P transporters (e.g., 10% formalin and PVA)	Outpatients: Collect 3 specimens every other day Hospitalized px (inpatients): Daily specimen collected for 3 days; Specimens from inpatients hospitalized >3 days should be discouraged	Wait 5-10 days minimum (up to 2 weeks) if patient has received antiparasitic compounds, barium, iron, Kaopectate, metronidazole, Milk of Magnesia, Pepto-Bismol, or tetracycline	Fresh liquid specimens: <30 min of passage Semiformed: <1 hour of passage Specimen in fixatives: 24 hrs/RT	Indefinitely/RT
Hair, Nails, or Skin Scrapings (for fungal culture)	Clean, screw-top tube	Nails or skin: Wipe with 70% alcohol	Hair: collect hairs with intact shaft Nails: send clippings of affected area Skin: scrape skin at leading edge of lesion	Within 72 hrs/RT	Indefinitely/RT
BAL, BB, BW	Sterile, screw-top container		Anaerobic culture	<2 hrs/RT	24 hrs/4°C
Sputum, tracheal aspirate (suction)	Sterile, screw-top container	Have patient brush teeth and then rinse or gargle with water before collection	Have patient collect from deep cough; specimen should be examined for suitability for culture by Gram stain; induced sputa on pediatric or uncooperative patients may be watery because of saline nebulization	<2 hrs/RT	24 hrs/4°C
Nasopharynx Nose	Swab moistened with Stuart's or Amie's medium		Spx of choice for Bordetella pertussis	<15 min, RT without transport media; <2 hrs/RT using transport media	24 hrs/RT
Pharynx (throat)	Swab moistened with Stuart's or Amie's medium		Routine culture for group A streptococcus (S. pyogenes) only	<2 hrs/RT	24 hrs/RT
Clean-voided Midstream urine (CVS)	Sterile, screw-cap container			Preserved within 24 hrs/RT Unpreserved <2 hrs/RT	24 hrs/4°C

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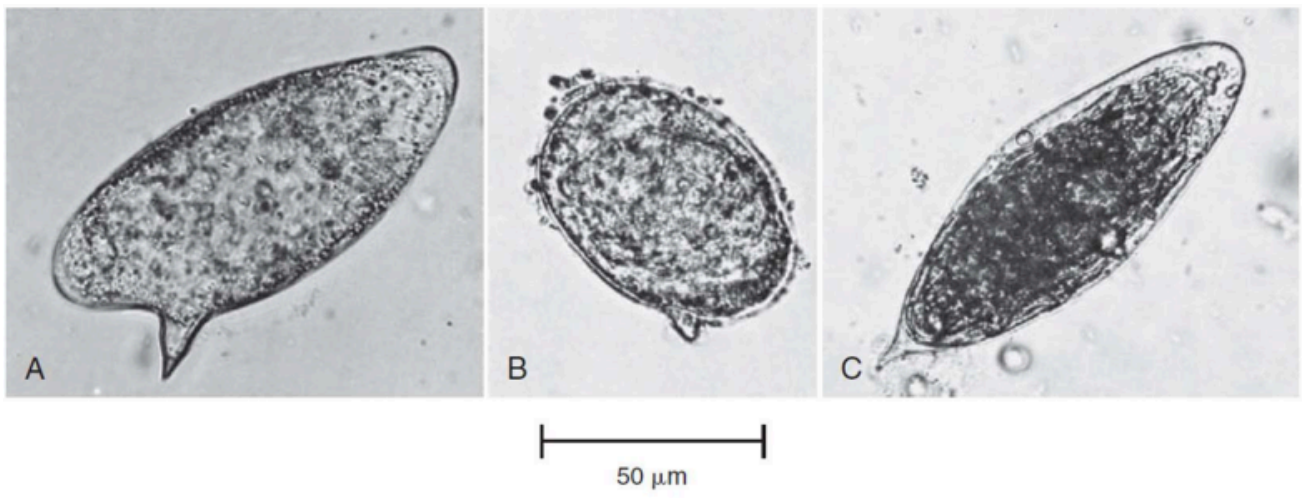
13. Blood flukes



• **Figure 57-2** **A,** *Schistosoma mansoni* egg. **B,** *Schistosoma japonicum* egg. **C,** *Schistosoma haematobium* egg.

S. japonicum	**Pointed terminal spine, unoperculated, embryonated**
S. mansoni	**Large lateral spine, unoperculated, embryonated**
S. japonicum	**Small lateral spine, unoperculated, embryonated**
S. intercalatum/guineensis	**Resembles egg of S. haematobium, but acid-fast positive**
S. mekongi	**Resembles egg of S. mansoni, but much smaller**
S. indicum	**large, sinuous, terminally-spined egg**

14. Magnification for trichrome stained smear:
Examine the smear microscopically utilizing the **100× objective**.
Examine at least 200 to 300 oil immersion fields. (CDC)

15. Review: Vectors, MOT, etc. Recall: Which of the following match is correct?
a) Leptospirosis – acquired through kissing
b) R. prowazekii – transmitted by lice

16. Stain of choice for blood films for malarial parasites:
Giemsa

Malaria		Preerythrocytic:				
Plasmodium vivax	Infection through mosquito bite, blood transfusion, shared drug needles; transplacental	Liver.	Drawn immediately: **STAT request** Blood; draw every 6 hr until confirmed as positive or negative	Thick, thin blood films; rapid immunoassay methods (not yet FDA approved in United States); concentration methods.	Parasites present	*P. falciparum* and *P. knowlesi* infections are **medical** emergencies; complete patient history mandatory (travel, prophylaxis, prior history); Giemsa or other blood stain recommended.
Plasmodium ovale		Blood.				
Plasmodium malariae		Blood.				
Plasmodium knowlesi		Blood.				
Plasmodium falciparum		Blood. Blood plus capillaries of deep tissues (spleen, liver, bone marrow).				
Babesiosis *Babesia* spp.	Tick borne; transfusion; organ transplants	Blood.	Blood	Thick, thin blood films.	Parasites present	Can mimic ring forms of *P. falciparum;* patient will have no travel history outside of United States.

PRAY BEFORE, DURING, AFTER YOU STUDY/ TAKE THE EXAM

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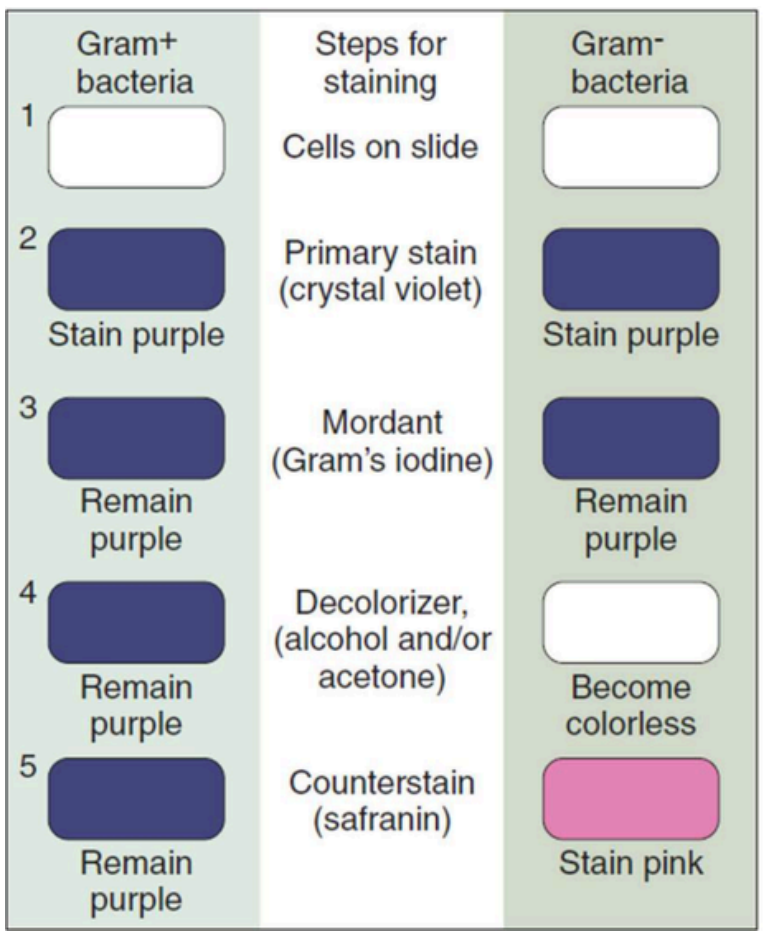
17. Purpose of mordant in gram staining:

a) dye fixative

b) secondary stain

c) reinforcing stain

d) differentiation



1 Fix material on slide with methanol or heat. If slide is heat fixed, allow it to cool to the touch before applying stain.
2 Flood slide with crystal violet (*purple*) and allow it to remain on the surface without drying for 10 to 30 seconds. Rinse the slide with tap water, shaking off all excess.
3 Flood the slide with iodine to increase affinity of crystal violet and allow it to remain on the surface without drying for twice as long as the crystal violet was in contact with the slide surface (20 seconds of iodine for 10 seconds of crystal violet, for example). Rinse with tap water, shaking off all excess.
4 Flood the slide with decolorizer for 10 seconds or less (optimal decolorization depends on chemical used) and rinse off immediately with tap water. Repeat this procedure until the blue dye no longer runs off the slide with the decolorizer. Thicker smears require more prolonged decolorizing. Rinse with tap water and shake off excess.
5 Flood the slide with counterstain and allow it to remain on the surface without drying for 30 seconds. Rinse with tap water and gently blot the slide dry with paper towels or bibulous paper or air dry. For delicate smears, such as certain body fluids, air drying is the best method.
6 Examine microscopically under an oil immersion lens at 1000x for phagocytes, bacteria, and other cellular material.

18. Pathogenesis of E. histolytica

The pathogenesis of E. histolytica is related to the organism's ability to directly lyse host cells and cause tissue destruction. Amoebic lesions show evidence of cell lysis, tissue necrosis, and damage to the extracellular matrix. Evidence indicates that E. histolytica trophozoites interact with the host through a series of steps:

a. adhesion to the target cell,

b. phagocytosis, and

c. cytopathic effect

Numerous other parasite factors also play a role. From the perspective of the host, E. histolytica induces both humoral and cellular immune responses; cell mediated immunity is the major human host defense against this complement-resistant cytolytic protozoan.

19. Immunoassays can be used in detecting which parasite?

a) Malaria

b) (?) c) Trichuris

d) Ascaris

20. Transport media for V. cholerae:

a) Stuart

b) Amies

c) Cary-Blair

21. Review: Media indicators

Neutral Red "SMac" **- SSA** **- MacConkey** **Fermenters: Pink to Red colonies**	**Phenol Red "MXCUT"** **-MSA** **-XLD** **-CTA** **-Urease** **-TSI** **Fermenters: Yellow colonies**	**Bromthymol blue "CHOT"** **-Citrate** **-HEA** **-OF medium** **-TCBS** **Fermenters: Yellow to orange yellow**

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22. Which organism would demonstrate a cherry red color in indole test:
a) P. aeruginosa
b) (?)
c) Enterobacteriaceae
d) Streptococci

23. McFarland turbidity standards
- prepared by mixing 1% sulfuric acid and 1.175% barium chloride
- The **0.5** McFarland standard, which is commercially available, provides an optical density comparable to the density of a bacterial suspension of **1.5 x 108 CFU/mL**

24. MacConkey agar:
for the isolation and differentiation of lactose fermenting and non–lactose fermenting enteric bacilli
The question was – All of the following are true about MacConkey EXCEPT

25. Indicator organisms used to detect bacterial contamination in drinking water:
coliform

26. Chlamydia can be recovered in what specimens
- Vaginal swab
- Endocervical swab
- Urine
- Liquid-based cytology
- Urethral swab (men)

27. Review: Antimicrobial Susceptibility Testing

Important notes:
- A dark background and reflected light are used to examine disk diffusion plates.
- Before results with individual antimicrobial agent disks are read, the plate is examined to confirm that a confluent lawn of growth has been obtained.
- The lack of confluent growth may be due to insufficient inoculum.
- Certain motile organisms, such as Proteus spp., may swarm over the surface of the plate and complicate clear interpretation of zone boundaries. In these cases, the swarming haze is ignored and zones are measured at the point where growth is obviously inhibited.
- Bacterial growth that is visible inside the zone of inhibition is caused by either inoculation with a mixed culture or emergence of resistant mutants of the test isolate.
- When testing is performed by disk diffusion, only the category interpretation of **susceptible, intermediate**, or **resistant is reported.**
- The point at which critical mass is reached is demonstrated by a: sharply marginated circle of bacterial growth around the disk . The concentration of antimicrobial compound at this margin is called the critical concentration and is approximately equal to the minimum inhibitory concentration obtained in broth dilution susceptibility tests.

28. Method to assess milk quality: The two most common tests for determining milk quality are **somatic cell count** and **standard plate count**. I failed to recall the four exact choices, I only remembered **"Microscopic Plate Count"**

29. Associated with cholangiocarcinoma:
Clonorchis and Opisthorchis infections

30. PINWORMS: Enterobius vermicularis, a roundworm parasite commonly found in children worldwide, is referred to as pinworm or seatworm. The adult female worm migrates out of the anus, usually at night, and deposits her eggs on the **perianal area.**

MTLE MARCH 2023 RECALLS

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31. Review: Common names of microorganisms

Whipworm – Trichuris trichiuria
Threadworm – Strongyloides stercoralis
Tapeworm – Cestodes
Pinworm – Enterobius vermicularis

32. Actinomyces are:
Gram-positive bacilli, facultative anaerobe

All cocci are GRAM POSITIVE except: **"No Boyfriend Muna para Virgin"** **(Neiserria, Branhamella, Moraxella, Veilonella)**	**All bacilli are GRAM NEGATIVE except:** **"MCC BEL LANGA"** **(Mycobacterium, Clostridium, Corynebacterium, Bacillus, Erysipelothrix rhusiopathiae, Listeria, Lactobacillus, Arcanobacterium, Nocardia, Gardnerella, Actinomyces)**

33. Which of the following is the specimen of choice for detecting rotavirus? Elsevier
a) Throat swab
b) Urine sample
c) Bronchoalveolar wash
d) Feces sample

34. Which of the following specimens would be best for identifying Bacillus cereus as the cause of an outbreak of food poisoning?
a) Blood
b) Rectal swabs
c) Stool samples
d) Food

35. TCBS agar:
a) Vibrio
b) Salmonella
c) Shigella
d) Plesiomonas

36. IMViC
I – Indole
M – Methyl Red
V – Voges-Proskauer **NOT V for virulence**
C – Citrate utilization

37. Samples (2) for detection of microsporidia: * Fresh, Formalin-fixed
a) Fresh
b) Refrigerated
c) Ethanol fixed
d) Formalin fixed

38. Typically, Petri dishes are **inverted**, to prevent condensation droplets from falling onto the surface of the agar.

Additional info: If you pour your own agar plates and get lots of bubbles, try gently passing the flame of a Bunsen burner over the surface of the agar in the plate. The heat of the flame will pop the bubbles.

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39. REVIEW: Biochemical tests of ENTEROBACTERIACEAE
Practice questions from Harr:

TSI = A/A	Indole = Neg	MR = Neg
VP = +	Citrate = +	H_2S = Neg
Urease = +	Motility = Neg	

a) Serratia marcescens
b) Proteus vulgaris
c) Enterobacter cloacae
d) Klebsiella pneumoniae

TSI = A/A gas	Indole = +
VP = Neg	MR = +
H_2S = Neg	Citrate = Neg
Urease = Neg	Lysine decarboxylase = +
(PD) Phenylalanine deaminase = Neg	

a) Proteus vulgaris
b) Salmonella typhi
c) Yersinia enterocolitica
d) Escherichia coli

H_2S (TSI) = Neg	Indole = Neg
MR = Neg	VP = +
DNase = +	Citrate = +
Urease = Neg	
(PD) Phenylalanine deaminase = Neg	
Ornithine and lysine decarboxylase = +	
Arginine decarboxylase = Neg	
Gelatin hydrolysis = +	

a) Proteus vulgaris
b) Serratia marcescens
c) Proteus mirabilis
d) Enterobacter cloacae

Rapid lactose fermenters TSI: A/A **EKE**	**Late lactose fermenters TSI: K/A or A/A** **Cit Ser Yer Haf Sa Shi is Late**	**Non lactose fermenters TSI: K/A**
Escherichia Klebsiella Enterobacter	Citrobacter, Serratia, Yersinia enterocolitica, Hafnia, Salmonella arizonae, Shigella sonnei	**S**almonella, **S**higella, **P**roteus, **P**rovidencia, **M**organella, **E**dwardsiella, **E**rwinia
Some Killers Have Pretty Nice Capsule: S. pneumoniae K. pneumoniae H. influenzae P. aeruginosa N. meningitidis C. neoformans	**Non-motile: SKY** Shigella Klebsiella Yersinia enterocolitica (motile @ RT)	**Indole + SPG Mor PEKPEC Ples** Morganella, Proteus vulgaris, E. coli, Klebsiella oxytoca, Providencia, Edwardsiella tarda, Citrobacter koseri, Pleisiomonas

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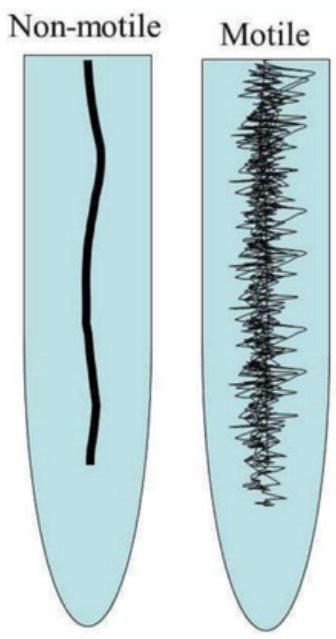
VP + **KEESH** Since VP and MR usually have opposite reactions. Those are not listed below would most likely be MR+ Klebsiella Ewingella Enterobacter Serratia Hafnia	**Citrate +** **Pro SHaCK** Providencia Serratia Hafnia Citrobacter Klebsiella	**DNASE (+)** **SSS Mo** S. pyogenes S. aureus Serratia Moraxella
H2S Producers **SPACEd** Salmonella Proteus Arizonae Citrobacter freundi Edwardsiella tarda	**Slow Urease** **"CKEYS"** Citrobacter Klebsiella Enterobacter gergoviae Yersinia enterolitica Serratia	**Rapid Urease** **"TPUNCH"** T. mentagrophyes PPM (Providencia, Proteus, Morganella) Ureaplasma Nocardia C. neoformans H. pylori

CPON
(Catalase pos; Oxidase neg)
Staphylococcus
All ENTEROBACTERIACEAE (except Pleisiomonas)
Francisella

40. Photos appeared on March MTLE:

Plasmodium falciparum

Motility test



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Hemolysis on BAP

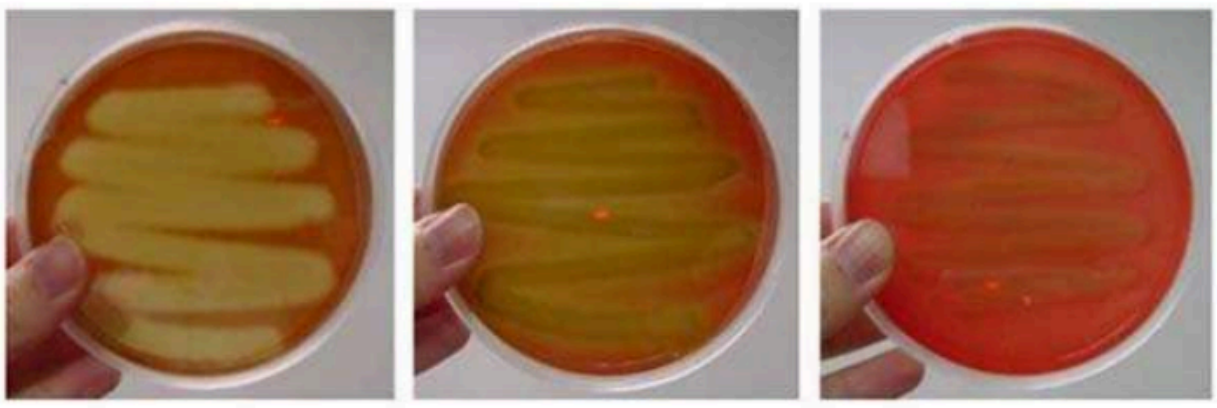
Blood Agar:

Shows three types of hemolysis

α Hemolysis

β Hemolysis

γ Hemolysis



Beta Hemolysis | Alpha Hemolysis | Gamma Hemolysis

MTLE AUGUST 2023 RECALLS

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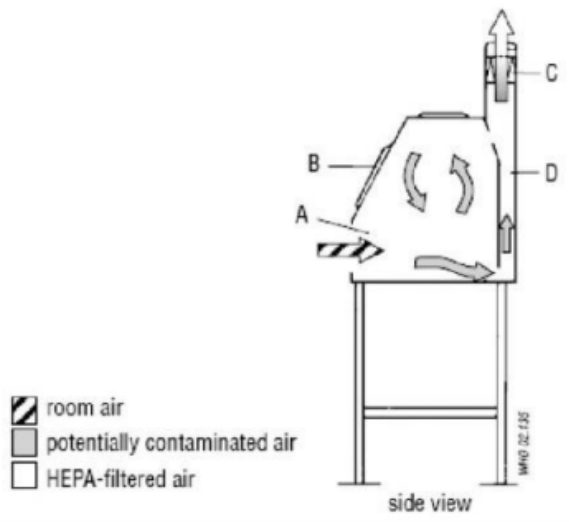
1. Which of the following bacteria should be considered important pathogens when reading gram-stained smears of soft tissue abscess?
a. Streptococcus pneumonia
b. Neisseria gonorrhoeae
c. Pseudomonas aeruginosa
d. Staphylococcus aureus

2. The best specimen for the isolation of Bordetella pertussis is which of the following?
a. Throat swab
b. Sputum
c. Nasopharyngeal swab (aspirates)
d. Anterior nose swab

3. The organism most commonly associated with otitis media infections is associated with which of the following positive test results?
a. Coagulase
b. VP
c. Optochin
d. Bacitracin

4. Which type of biological safety cabinet is seen in the picture below?Identify the BSC:
a. BSC I
b. BSC II
c. BSC III
d. BSC IV

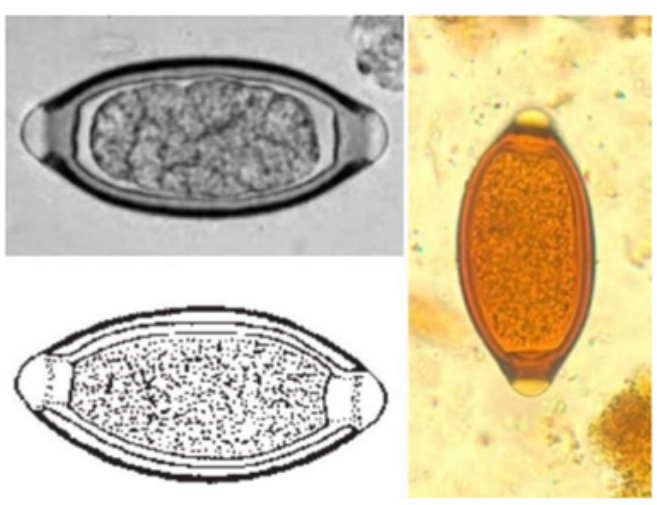


5. IMVIC of E.coli
Answer: ++--

6. Profuse watery diarrhea (rice water stools) leading to dramatic fluid loss, severe dehydration and hypotension that frequently leads to death, is the hallmark of which toxin activity?
Answer: Cholera toxin

7. Trophozoite forms of amoeba are found in what type of stool specimen?
Answer: Watery

8. Identify the parasite whose ova is shown in the picture
Answer: Trichuris trichiura



MTLE MARCH 2024 RECALLS

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1. All of the following are spiral-shaped, EXCEPT:

A.Clostridium botulinum

B.Helicobacter pylori

C.Treponema pallidum

D.Vibrio cholerae

2. The presence of residual chlorine in drinking water means:

A. Sufficient amount of chlorine was added initially to the water

B. Water is unsafe for drinking

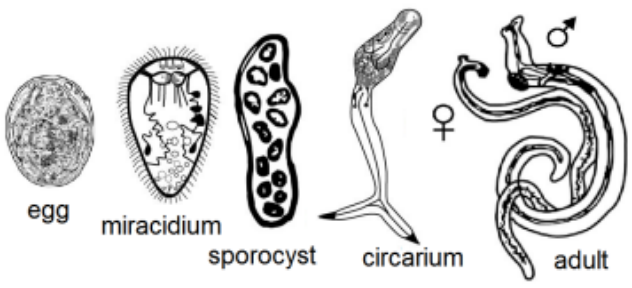
C. Additional treatment is required to remove chlorine

D. Water is contaminated with coliform

3. Acquired through ingestion/inhalation:

E. vermicularis

4. Recall: MIRACIDIUM



5. How to validate the result of AST?

A. Parallel testing with a new method

B. Parallel testing with another personnel

C. Testing with a reference reagent

D. Testing with a reference organism

6. What test is employed in the differentiation of the Enterobacteriacae family.

a. IMViC

b. Indole

c. Glucose Fermentation

d. Capsule

7. What is the Pre-Analytical part of Microbiology Testing?

a. Standardization of Parasite naming

b. Something about slides

c. Proper storage of reagents and stains

d. Identify Patient

8. Best time to collect E. Vermicularis ova.

a. Morning

b. Afternoon

c. Night

d. Midday

9. How Parasitism is expressed when malaria parasite is quantitated against RBC.

a. Parasite/ul of Blood

b. Ratio

c. Average

d. Mean

10. Which type of organism isolated if growth in MAC is pink?

a. Non-lactose fermenter

b. Microaerophile

c. Lactose fermenter

d. Obligate aerobe

MTLE MARCH 2024 RECALLS

God bless, future RMT!

11. Method that uses heat to facilitate better staining of bacterial cell walls
a. Gram stain
b. Kinyoun
c. Zeihl neelsen
d. Acid fast stain

12. Specimen is obtained from an intravascular catheter. Gram stain showed gram positive bacteria. Which of the following is the most probable cause?
a. S. aureus
b. e. coli
c. P. aeruginosa
d. K. pneumoniae

13. Uses coagulase test, EXCEPT:
a. Salmonella
b. S. aureus
c. Shigella
d. S. pyogenes

14. In a MacConkey Agar, what is the color of the lactose fermenting colonies?
a. Colorless
b. White
c. Red
d. Pink

15. Westgard rule considered as Mandatory rule.
A. 12s
B. 41s
C. 22s
D. 13s

16. All of the following are spiral-shaped,
EXCEPT:
a. Clostridium botulinum
b. Helicobacter pylori
c. Treponema pallidum
d. Vibrio cholerae

17. Actinomyces are:
A. Gram positive bacilli, Facultative anerobe
B. Gram positive bacilli, facultative anaerobe
C. Gram negative cocci
D. Gram positive cocci

18. Babes-Ernst granules are the metachromatic granules produced by:
a. M. tuberculosis
b. Y. pestis
c. C. diptheriae
d. E. aerogenes

19. Mc. Farland standard is equivalent to:
a. 0.5 x 10^8 CFU/ml
b. 1.5 x 10^8 CFU/ml
c. 0.5 x 10^9 CFU/ml
d. 1.5 x 10^9 CFU/ml

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20. What is the characteristic odor of Proteus?
a. Grape-like/Corn tortilla-like odor
b. Bleach like odor
c. Fruity odor resembling apples or strawberries
d. Burnt chocolate odor

21. What is the most sensitive test for Chlamydia?
a. NAAT
b. Cell culture
c. EIA
d. Microscopy

22. Happens during microorganism resistance EXCEPT:
a. ag-ab complex
b. penetration of membrane protein
c. reduced antimicrobial therapy
d. by passing the membrane protein

23. Best in monitoring malaria
a. Microscopy
b. NAAT
c. Serology

24. The ff. are parasite:infective stage EXCEPT:
a. Strongyloides stercoralis: Rhabditiform larva
b. Ascaris lumbricoides : Embryonated egg
c. Ancylostoma duodenale : Filariform larva
d. Trichuris trichuria : Embryonated egg

25. Color of gram negative after decolorization step
A. Purple
B. Red
C. Colorless
D. Pink

26. **Protein coat of a virus?**
A. Capsid
B. Capsomere
C. Virion

27. Sample use for cultivating B. cereus in food poisoning?
A. Blood
B. Stool
C. Food
D. Saliva

28. Color of spirochetes in Warthin-Starry stain
A. Colorless
B. Yellow
C. Black
D. Purple

MTLE MARCH 2024 RECALLS

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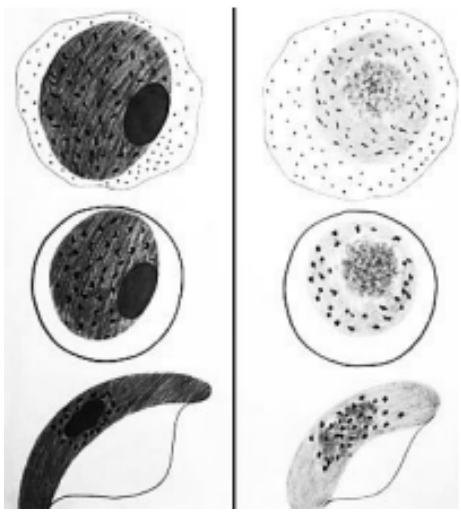
29. Malarian gametocyte
A. P. malariae
B. P. falciparum
C. P. ovale
D. P. vivax

30. Identify:



A. P. malariae
B. P. falciparum

31. Ingested by female anopheles during blood meal?
A. Sporozoites
B. Gametocytes
C. Oocyst

32. Chromosome present in CML
A. ABL1
B. Philadelphia chromosome

33. By arrangement bacteria can be classified as:
a. rod
b. spiral
c. pairs
d. all of these

34. Test to aid in differentiating Neisseria, Moraxella, Campylobacter and Pasteurella
a. indole
b. oxidase
c. catalse
d. nitrate

35. Stain in gram stain that stains gram positive cell wall
a. crystal violet
b. safranin
c. acid alcohol
d. color fuschin

36. Media used to visually distinguish one organism from one another
a. selective media
b. differential media
c. enriched media
d. enrichment media

MTLE MARCH 2024 RECALLS

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37. Media used to visually distinguish one organism from one another
a. selective media
b. indicator media
c. enriched media
d. enrichment media

38. All of the following is true about autoclave except:
a. 121 degree Celsius at 15 psi
b. dry heat
c. wet heat
d. bacillus stearothermophilus is the QC organism

39. Solidifying agent of cary blair
a. silica gel
b. agar
c. gelatin
d. ice

40. Source of nitrogen in agar
a. dextrose
b. glucose
c. peptones
d. oxygen

41. Color of spirochete in Warthin starry
a. red
b. blue
c. green
d. black

42. What would be the color of lactose-fermenters on MacConkey agar?
a. Red
b. Pink
c. Yellow
d. Blue

43. All of the following are diagnostic tests for Chlamydia except:
a. Rectal swab
b. urethral swabs
c. serum
d. urine

44. Gram positive cell wall ___ the crystal violet stain.
a. change
b. retain
c. enhance
d. no effect

45. Correct base pairs: A;T G;C

MTLE AUGUST 2024 RECALLS

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1. Which type of sample is typically used to detect eggs of Paragonimus westermani?
A. Stool
B. Sputum
C. Blood
D. Urine

2. Which type of bacteria retains a purple color after the decolorization step in the Gram staining procedure?
A. Gram-positive
B. Gram-negative

3. Which stain is commonly used for identifying Helicobacter pylori?
a) Gram
b) Giemsa
c) Wright

4. Which of the following causes of Loeffler's pneumonitis is associated with peripheral eosinophilia:
Ascaris lumbricoides

5. Which of the following bacteria grows on MacConkey agar and is non-motile?
A. Salmonella
B. Klebsiella

6. Which of the following bacteria is characterized by:
- Gram-positive bacilli
- Motility negative
- H2S negative
- Catalase positive

A. Corynebacterium
B. Erysipelothrix
C. Listeria
D. Group B Streptococcus

7. Which of the following bacteria causes an alkaline reaction in the slant with blackening in a TSI test?
A. Salmonella
B. Proteus

8. **Which Gram-positive cocci are: Catalase positive Coagulase positive Mannitol salt agar (MSA) positive**
A. ?
B. Staphylococcus haemolyticus
C. Staphylococcus epidermidis
D. Staphylococcus aureus

9. What type of medium is CAP?
A. Differential
B. Selective
C. Enriched (nutritive)

MTLE AUGUST 2024 RECALLS

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10. When analysis of blood smears for malaria are requested, what patient information should be obtained?
A. Diet, age, gender
B. Age, antimalarial medication, gender
C. Travel history, antimalarial medication, date of return to United States
D. Fever patterns, travel history, diet

11. What preserves fungi in lactophenol cotton blue?
A. Lactic acid
B. Cotton blue
C. Phenol

12. What is the typical storage temperature for viruses?
A. 4°C
B. -70°C
C. 70°C

13. What is the name of the toxin produced by Aspergillus species?
A. Aflatoxin
B. Mycotoxin
C. Ochratoxin
D. Patulin

14. **What is the morphology of the gametocyte of Plasmodium falciparum?**
A. Band form
B. Head phone
C. Banana shape

15. **What is the essential feature of Plasmodium?**
A. Phagocytosis of RBC
B. Destruction of RBC
C. Parasitemia
D. Sporozoitemia

16. What is the difference between Entamoeba dispar and Entamoeba histolytica?
Trophozoites of Entamoeba histolytica contains RBCs

17. What is the common mode of transmission of ascaris?
A. Ingestion
B. Vector

18. What is the color for a lactose fermenter?
A. Pink
B. Yellow
C. Colorless

19. What are common modes of transmission for pathogenic protozoans?
A. Coitus
B. Fecal-oral route

MTLE AUGUST 2024 RECALLS

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20. The specimen of choice for the recovery of Schistosoma japonicum is which of the following?
A. Tissue biopsy
B. Urine
C. Sputum
D. Stool

21. If delayed, the spinal temperature is held at which of the following degrees Celsius?
A. 22°C
B. 25°C
C. 38°C

22. Causative agent of Tinea versicolor:
Malassezia furfur

23. Cary-Blair medium is used for the preservation and transport of which type of specimen?
A. Stool samples
B. Blood samples
C. Urine samples
D. Sputum samples

MTLE OTHER RECALLS

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1. If there is delay in processing of viral samples at what temperature is the sample stored?	a. 4 deg. Celsius b. (-) 4 deg. Celsius c. 70 deg. Celsius d. (-) 20 deg. Celsius
2. If there is a delay in processing of fungal samples, what should you do?	a. refrigerate the sample b. add NSS to the sample c. freeze the sample
3. when cleansing the skin with alcohol and then iodine for the collection of a blood culture. the iodine (or iodophore) should remain intact on the skin for at least:	a. 10 sec b. 30 sec c. 60 sec d. 5 min
4. True about quality control testing	a laboratory can perform weekly qc once accurate performance of 20 to 30 days of daily quality control has been documented
5. how to validate the results of AST?	testing with a reference organism
6. Purpose of automation in Microbiology section	An advantage of automated systems includes an interface to laboratory information systems, leading to decreased turnaround times for reporting of results. Other advantages include statistical prediction of correct identification, increased data acquisition and epidemiologic analysis, and automated standardization of identification profiles that can reduce analytical errors. – mahon (pg 192)
7. Bile stained with double plugs	Trichuris trichiura
8. Crescent-shaped gametocyte	Plasmodium falciparum
9. Most common method for isolation of pure culture	Streaking
10. Examination of blood film fixed with methanol	Thin Blood Film only
11. Parasites with Snail as Intermediate host	Trematodes
12. Common coliform found in water	E.coli

MTLE OTHER RECALLS

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13. Cryptococcus neoformans on BAP	**good growth on blood agar plates incubated in the bacteriology laboratory at 35°–37° C, a mucoid appearance of the colonies, a round appearance of the yeast cells without pseudohyphae in microscopic wet preps or stained preparations, and lack of growth on media that contain cycloheximide. (henry's pg 1170)**
14. How to eradicate Cryptosporidium?	**To KILL or inactivate crypto, bring your water to rolling boil for one minute (at elevations above 6,500 feet, boil for three minutes). Water should then be allowed to cool, stored in a clean sanitized container with a tight cover, anf refrigerated. An alternative to boiling is using a point-of-filter.**
15. Non-culturable Campylobacter specie, what should the technologist do to identify organism? **A. PCR** **B. Gram staining** **C. ?** **D. ?**	**real-time polymerase chain reaction (qPCR) targeting the rpoB gene to detect and quantify Campylobacter jejuni in the VBNC state.** ---**ncbi.nlm.nih.gov**
16. Nematode that cannot be recovered in blood? **A. Loaloa** **B. T. spiralis**	**T. spiralis**
17. Which of the following is the most infectious? **a. hepatitis B** **b. Hepatitis C** **c. Hepatitis E** **d. HIV**	**HBV is 50 to 100 time infectious than HIV (W.H.O) Hepatitis B virus is approximately 5 to 10 more infectious than hepatitis C.**
18. Schizonts can be found in: **a. intermediate host** **b. end host** **c. definitive host**	**intermediate host (human)**
18. TINCTURE	**Iodine plus 70% alcohol**
19. odophore	**Iodine plus detergent**
20. CSF	**At leat 1 mL in volume 15 minutes transport time**
21. Germ tube	**Beginning of true hyphae**
22. Blastocoidia	**Beginning of pseudohyphae**

MTLE OTHER RECALLS

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23. Causative agent of spelunker's disease	**Histoplasma**
24. Barrel-shapes arthroconidia	**Coccidioides immitis**
25. Associated with sclerotic bodies	**Chromoblastomycosis**
26. Pour-plate method	**Used to separate organuisms from a mixed culture of liquid specimen**
27. Solid	**Medium for streak plate method**
28. Top	**Greatest amount of antibiotic in E-test strip**
29. Stationary phase	**Phase of the bacteria growth cycle where SPORES are formed**
30. LIA	**Top: aerobic slant deamination +ve: Burgundy red)**
31. S. lugdunensis	**Associated with catheter related bacteremia and endocarditis**
32. S.epidermitis	**Associated with slime production and prosthetic heart valve endocarditis**
33. S.pneumoniae	**NUMBER 1** **- Meningitis in adults** **- Otitis media** **- Pneumonia** **- Sinusitis**
34. N.meningitidis	**Able to grow on SBA and CHOC N.gonorrjeaea**
35. Blastomyces dermatitidis	**Single bud connected tio the parent cell with a broad base**
36. Presumptive, confirmed , completed	**Most probable number (MPN) test identifies coliforms based on three parts**
37. EMB	**What is used for the completed test indicating the presence of coliforms**
38. Xenopsylla Cheopis	**Vector of Yersinia pestis**

MTLE OTHER RECALLS

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39. Desoxycholate	Ssa is a modification of what agar
40. Psychrophile	A microorganism capable of growth at cold temperature
41. Microorganism that is able to grow at 42' C	Some other organisms that is able to grow at 42'C • Campylobacter jejuni • Campylobacter coli • Pseudomonas aeruginosa • B. pseudomallei • *Helicobacter pylori (+/V)
42. Usually a dead end host **A. Human** **B. Mosquito** **C. Amphibian** **D. Fish**	Human
43. Transport medium for vibrio	Cary-blaire
44. Depth of MHA agar	4mm
45. Negative control for optochin	Streptococcus pyogenes
46. Bile stained ova with bipolar plugs **Flattened— capillaria** **Prominent— trichuris**	Trichuris trichiura
47. Parasite that can be transmitted sexually except **A. G.lablia** **B. T. Vagilalis** **C. E.histolytica** **D. B.coli**	B.coli
48. Rosette appearance of the uterus of the gravid proglottid	D latum
49. Part of B. Stearothermophilus used as a biological indicator?	Spores
50. Used to differentiate E. Rhusiopathiae from other gram positive bacilli	H2S positive
51. Associated with aflatoxin	Aspergillus

MTLE OTHER RECALLS

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52. What is the term when water is safe to drink and can be used for cooking? **a. Potable** **b. Filtered** **c. Distilled**	**Potable**
53. Cresent sausage shaped gametocyte	**P.falciparum**
54. Other name of Nk cell	**Known as LGL cells or Null cells Known as Lymphokine activated killer (LAK) cells**
55. Ratio of stool specimen to preservative	**1:3**
56. When the scolex, proglottid, cyst are inside the daughter cyst	**Brood capsule**
57. Suitable container for CSF	**Sterile, screw-cap tube**
58. Source of energy in SDA	**Dextrose**
59. first larval stage of a trematode which is hatched from an egg often ciliated and free-swimming	**Miracidium**
60. Layers of FECT Top to bottom	**Ether, fecal Debris, Formalin, Sediments**
61. Material used in nasopharyngeal swab	**Flocked nylon**
62. What differentiates Bordetella bronchiseptica and Alcaligenes faecalis?	**Spores**
63. Autoclave principle	**PRINCIPLE: steam under pressure can't kill Hepatitis A virus** **> 121oC; 15-20 mins.; 15 psi – materials in the lab** **> 132oC; 30–60 minutes; 15 psi – medical waste** **BIOIOGICAL INDICATOR: Bacillus stearothermophilus (SPORES) incubated at 56°C**

MICROBIOLOGY & PARASITOLOGY EXAMINATION AND RATIO

1. Which of the following statements about Wuchereria bancrofti is incorrect?

A. It is a cestode
B. Infection is acquired via bite of mosquito
C. Sheathed filarial parasite
D. Tail nuclei do not extend to the tip

Infection is acquired by bite of mosquito.
W. bancrofti is a nematode fi/arial parasite.
W. bancrofti is sheathed with tail nuclei not extending to the tip.

2. All of the following are BSL-2 organisms, except:

A. Salmonella spp.
B. Coxiella burnetii
C. HIV
D. Toxoplasma

Examples of BSL-2 : organisms are hepatitis B virus, HIV, Salmonella spp., and Toxoplasma spp.
Examples of BSL-3: organisms are M. tuberculosis, St. Louis encephalitis virus, and Coxiella burnetii

3. Which of the following are dimorphic fungi?

I. Sporothrix schenckii
II. Coccidioides immitis
III. Histoplasma capsulatum
IV. Paracoccidioides brasiliensis

A. 1, 11, 111
B. 11, 111, IV
C. I, 111 , IV
D. I, II, III, IV

Thermally dimorphic fungal species associated with human disease include Blastomyces dermatitidis, Coccidioides immitis, Histo-plasma capsulatum var. capsulatum, Paracoccidioides brasi/iensis, Sporothrix schenckii, and Penicillium marneffei.

4. What is the appearance of Salmonella on Salmonella-Shigella Agar?

A. Colorless without black centers
B. Colorless with black centers
C. Red colonies
D. Yellow colonies

Another selective and differential medium is SS (Salmonella-Shigella) agar, a light straw-colored medium where Salmonella colonies will appear as colorless with dark black centers from the production of hydrogen sulfide and Shigella colonies will appear as colorless colonies only.

5. Tests to differentiate Streptococcus pneumoniae and Viridans Streptococci:

I. Taxo A
II. Bacitracin
Ill. Taxo P
IV. Optochin

A. I, II
B. III, IV
C. I, II, III, IV
D. None of the above

Taxo A (Bacitracin) and Taxo P (Optochin) differentiates Streptococcus pneumoniae that is susceptible to both disks from Viridans Steprococci thats resistant to both. Refer to TABLE 15-3: Biochemical Identification of Streptococcus and Similar Organisms.

6. Which of the following test results is most helpful in categorizing an isolate as a member of the Tribe Proteeae?
A. Positive Voges-Proskauer
B. Positive urea
C. Positive phenylalanine deaminase
D. Positive lactose fermentation

Phenylalanine deaminase (PAD) agar is used to detect an organism's ability to deaminate phenylalanine. A positive reaction is most useful for distinguishing Proteus, Providencia.and Morganella spp. from other members of the family Enterobacteriaceae.

7. Test used for the detection of Toxoplasmosis 0
A. Sabin-Feldman Dye Test
B. Montenegro Skin Test
C. String Test
D. Culture using Novy-MacNeal-Nicolle medium

The Sabin-Feldman dye test was the first antibody test developed to detect T. gondii.

8. Which of the following parasites exhibits true relapse?
I. Plasmodium falciparum
II. Plasmodium vivax
III. Plasmodium malariae
IV. Plasmodium ovale1r

A. I, II
B. 111, IV
C. I, III
D. 11 , IV

P. vivax and P. ova/e, however, may persist in the liver in a dormant stage known as hypnozoites, which accounts for the relapse (recurrence) of the disease within 1 to 3 years after the primary infection.

9. A 12-year old girl is brought to the emergency room experiencing fever, stiff neck, nausea and vomiting. She has a history of swimming in warm-water spring. Motile amoeba that measures 10-30 um with a nucleus that contains a large central karyosome that is surrounded by a halo are seen in the patient's CSF. These are likely:

A. Dientamoeba fragilis trophozoites
B. Endolimax nana trophozoites
C. lodamoeba butschlii trophozoites
D. Naegleria fowleri trophozoites

Initial symptoms of PAM caused by N. fowleri include severe bifrontal headache, fever (38° to 41 ° CJ, stiff neck, and nausea and vomiting. Diagnosis can be made by finding motile amebic trophozoites in the CSF. The trophozoite ranges in size from 10 to 30 µm and moves by explosively extending large, broad pseudopods {lobopodia). The nucleus contains a large central karyosome that is surrounded by a halo.

10. What is the diagnostic stage of Leishmania spp. ?
A. Trypomastigote
B. Epimastigote
C. Promastigote
D. Amastigote

Biopsy specimens are usually needed to diagnose infections with Leishmania spp. because the organisms are intracellular. Depending on the species present, the amastigote stage can be detected in tissues such as skin, liver, spleen, and bone marrow.

11. Which of the following non photochromogen slow grower Mycobacteria species will be ruled out if niacin is negative?
A. Mycobacterium gastri
B. Mycobacterium tuberculosis
C. Mycobacterium avium-intracellulare
D. Mycobacterium xenopi

M. tuberculosis is niacin positive. Other choices are niacin negative. Refer to FIGURE 26-8: Schematic diagram for the identification of slowly growing Mycobacterium spp.

12. To differentiate Mycoplasma pneumoniae from Mycoplasma hominis, one can use guinea pig RBCs. Mycoplasma pneumoniae doesn't adhere to the RBCs while Mycoplasma hominis adheres
A. Only the first statement is correct
B. Only the second statement is correct
C. Both statements are correct
D. Both statements are incorrect

M. pneumoniae will adhere to guinea-pig red blood cells. Refer to FIGURE 25-5: Flow diagram for Mycoplasma spp. isolation using classic methods.

13. Which of the following differentiates Taenia saginata from Taenia solium?
A. Egg morphology and number of uterine branches
B. Presence of hooklets on scolex and egg morphology
C. Presence of hooklets and number of uterine branches
D. Egg morphology and presence of suckers in scolex

Eggs for the two Taenia spp. look alike. Gravid proglottid or sco/ex is needed to make identification

SCOLEX:

Taenia saginata: Quadrate, no rostellum or hook/els, 4suckers
Taenia solium: Quadrate,has rostellum and hook/els, 4suckers

14. Which of the following parasite/s is/are incorrectly matched to its common name?
I. Strongyloides stercoralis: Threadworm
II. Enterobius vermicularis: Pinworm
III. Dipylidium caninum: Dog Hookworm
IV. Paragonimus westermani: Oriental Liver Fluke•

A. II, III
B.III, IV
C. IV only
D. I, II

Strongyloides stercoralis, known as the threadworm, inhabits the small intestine but is also capable of existing as a free-living worm.
Enterobius vermicularis, often called the pinworm.
Humans serve as accidental hosts for Dipylidium caninum, the dog tapeworm.
Paragonimus westermani, the oriental lung fluke, is known to cause brain lesions.

15. A beta-hemolytic, catalase-negative, gram-positive coccus is found to be hippurate hydrolysis positive and resistant to bacitracin. Which of the following is a likely presumptive identification?
A. Group A Streptococci
B. Group B Streptococci
C. Group D Streptococci
D. Enterococci

Group B (Streptococcus aga/actiae) is beta-hemolytic, cata/ase-negative, gram-positive coccus, hippurate hydrolysis positive and resistant to bacitracin. Refer to FIGURE 15-15: Schematic diagram for the presumptive identification of gram-positive cocci

16. Which of the following organisms is commonly tested for beta-lactamase production?
A. Neisseria meningitidis
B. Klebsiella pneumoniae
C. Streptococcus pneumoniae
D. Haemophilus influenzae

H. inf/uenzae produce (3-/actamase, and because H. inf/uenzae are often susceptible to alternative agents currently recommended, some laboratories may perform only a (3-/actamase test or test only ampicillin and trimethoprim su/famethoxazo/e by the disk diffusion or MIC methods.

17. An oxidase-negative, gram-negative bacillus that produces an alkaline slant and acid butt on triple sugar iron (TSI) agar is able to ferment which of the following carbohydrates?
A. Glucose only
B. Glucose and lactose and/or sucrose
C. Lactose only
D. Lactose and sucrose, but not glucose

Alkaline slant/no change in the butt (KINC): glucose, lactose, and sucrose nonutilizer; this may also be recorded as KIK(a/kaline slant/alkaline butt)

Alkaline slant/acid butt(KIA):g/ucose fermentation only
Acid slant/acid butt(AIA):glucose, sucrose, and/or lactose

18. Which of the following tests detects the production of mixed acids as a result of subsequent metabolism of pyruvate?
A. Methyl Red Test
B. Voges-Proskauer Test
C. Citrate Test
D. Indole Test

The methyl red detects mixed acid fermentation that lowers the pH of the broth.

19. A moderate growth of a heaped, dry-appearing, white organism is isolated from a patient with "thrush". The colony has tiny projections or "feet" projecting out along the edge of its margin. A presumptive identification of this organism would be:
A. Staphylococcus aureus
B. Staphylococcus epidermidis
C. Neisseria spp.
D. Candida albicans

Thrush is a type of candidiasis involving the oral mucosa and is characterized by white, curd-like patches on the tongue, palate, or buccal mucosa.

Colonial morphology of Candida albicans: Smaller than staphylococci; convex, grows upward more than outward; creamy, white, dull surface; usually displays TINY PROJECTIONS at the base of the colony after 24 hours of incubation

20. Which of the following are reasons to reject a specimen for culture?
A. The specimen is preserved in formalin.
B. Information on the requisition does not match information on the specimen label
C. A second stool sample is submitted from the same patient on the same day
D. All of the above

The following situations are examples of suboptimal specimens that must be rejected:
• The information on the requisition does not match the information on the specimen label. If the patient name or source does not match, the specimen should be collected again.
• The specimen is received in a fixative such as formalin. Stools for ova and parasites are exceptions.
•More than one specimen from the same source was submitted from the same patient on the same day, except for blood cultures

21. Susceptibility tests must be quality controlled daily except when which of the following is the case?
A. An automated sytem is in use
B. Controls have been in an acceptable range for 6 months
C. Precision is demonstrated for 20-30 consecutive days
D. A new antibiotic is added

Susceptibility testing of control organisms is usually conducted daily until precision can be demonstrated with 20 or 30 consecutive days of susceptibility testing using CLSI guidelines.

22. The most widely used method of inoculum standardization involves McFarland turbidity standards. The most commonly used is the McFarland 0.5 standard, which contains?

A. 90 ml of 1% sulfuric acid and 5 ml of 1.175% barium chloride
B. 90 ml of 1.175% barium chloride and 5 ml of 1 % sulfuric acid
C. 99.5 ml of 1.175% barium chloride and 0.5 ml of 1 % sulfuric acid
D. 99.5 ml of 1 % sulfuric acid and 0.5 ml of 1.175% barium chloride

The most commonly used is the McFarland 0.5 standard, which contains 99.5 mL of 1% sulfuric acid and 0.5 mL of 1. 175% barium chloride. The McFarland 0.5 standard provides turbidity comparable with that of a bacterial suspension containing approximately 1.5 •10'8 CFU/mL.

23. Chemical reagent used as a mordant in Kinyoun method for acid-fast staining:
A. 70% Ethanol
B. Heat
C. Tergitol
D. Acetone

The staining of acid-fast organisms may be accelerated by the addition of a detergent or wetting agent. Tergitol No. 7 (Sigma Chemical Co.) may be used. Add 1 drop of Tergitol No. 7 to eve,y 30 to 40 mL of the Kinyoun carbol fuchsin stain.

24. A young father of two small children complained a rash on the torso of his body. The children had been diagnosed with chickenpox and confined to their home. The father had chickenpox as a child and knew he did not have the same rash as his children. What is the most likely cause of the fathe~s rash?

A. Herpes Simplex 1 Virus
B. Varicella-Zoster Virus
C. Herpes Simplex 2 Virus
D. Epstein- Barr Virus

Herpes zoster is the clinical manifestation due to reactivation of VZV and usually occurs in adults. It is thought that the virus remains latent in the dorsal root or cranial nerve ganglia after primary infection. In a small proportion of patients, the virus becomes reactivated, travels down the nerve, and causes zoster. The most common presentation is rash.

25. Optimal recovery of Francisella tularensis is acquired by:
A. Increased CO2
B. Enriched media containing cysteine
C. 24-hour growth at room temperature
D. Anaerobic conditions

Francisella tularensis, the causative agent of tularemia, is best recovered from a liquid blood culture medium to which L cysteine and dextrose have been added.

26. Campylobacter are:
A. small, curved, motile, gram-positive bacilli
B. small, curved, motile, gram-negative bacilli
C. small, curved, nonmotile, gram-positive bacilli
D. small, curved, nonmotile, gram-negative bacilli

A wet preparation of the organism in broth may be examined for characteristic darting motility. Examination of the organisms under the microscope shows characteristic gram-negative curved rods.

27. Which of the following tests can differentiate Bacillus anthracis from Bacillus cereus?
I. Motility
II. Hemolysis on SBA
III. Lecithinase production
IV. Gelatin Hydrolysis

A. I, II
B. 111, IV
C. I, 11 , III
D I, II, IV

A (3-hemolytic frosted glass-appearing colony containing spore-forming, gram-positive bacilli that are motile is likely B. cereus.
B. anthracis is nonhemolytic on SBA and nonmotile.
B. cereus hydrolyses gelatin while B. anthracis does not.

28. The appropriate culture media for the recovery of Gardnerella vaginalis is
A. BCYE Agar
B. CIN Agar
C. HBT Agar
D. Middlebrook Agar

-- Buffered charcoal yeast extract (BCYE) agar with L-cysteine is best for Legionel/a isolation.
- Cefsulodin-igrasan-novobiocin (CIN) agar, a selective medium to detect the presence of Y. enterocolitica, incorporates cefsulodin, irgasan, novobiocin, bile salts, and crystal violet as inhibitory agents.
- Middlebrook media are solid media that support the growth of Mycobacteria.

29. All of the following are capnophilic bacteria which requires 5-10% CO2, EXCEPT:
I. Campylobacter jejuni
II. Haemophilus influenzae
III. Neisseria gonorrheae
IV. Helicobacter pylori

A. I, II , IV
B. 11, III
C. I, IV
D. I, II, III

- Many Neisseria spp. are capnophific, requiring CO2 for growth, and have optimal growth in a humid atmosphere.
- Members of the HACEK group have in common the need for an environment with increased CO2 (capnophilic).

30. Which of the following methods of sterilization and disinfection is incorrectly matched to its temperature and time required?
A. Autoclave: 121 .6 'c, 15 minutes
B. Batch Method Pasteurization: 63°C, 30 minutes
C. Flash Method Pasteurization: 72°C, 15 minutes
D. Boiling Water (Steam): 100°C, 15 minutes

Flash Method Pasteurization: 72°C, 15 SECONDS

31. Which of the following filarial parasite exhibit diurnal periodicity?
A. Wuchereria bancrofti
B. Loa loa
C. Onchocerca volvulus
D. Brugia malayi

Wuchereria bancrofti and Brugia malayi periodicity: NOCTURNAL Onchocerca volvulus: NONPERIODIC

32. The characteristics of being non-lactose fermenter, urease negative, lysine decarboxylase negative, and nonmotile best describes which organism?
A. Yersinia pestis
B. Klebsiella pneumoniae
C. Aeromonas hydrophila
D. Shigella dysenteriae

The following are characteristics of Shigella spp.: They are non-lactose fermenter, nonmotile, do not hydrolyze urea, produce hydrogen sulfide, and decarboxylate lysine.

33. Which of the following is true regarding Escherichia coli serotype 0157:H7?
A. Sorbitol fermenter
B. Mannitol fermenter
C. Sorbitol nonfermenter
D. Mannitol nonfermenter

Stool culture for E.coli O157:Hl may be performed using MAC agar containing sorbitol (SMAC) instead of lactose. E. coli O157:Hl does not ferment sorbitol in 48 hours, a characteristic that differentiates it from most other E.coli strains.

34. Cytomegalovirus isolation is recommended using:
A. Embryonated Hen's Egg
B. Monkey Kidney Cells
C. A549 Cells
D. Human Embryonic Fibroblasts

CMV produces cytopathic effects (CPE) in diploid fibroblast cells in 3 to 28 days, averaging 7 days.

35. All of the following belongs to anti-TB drugs EXCEPT:
I. Rifampin
II. Pyrazinamide
III. lsoniazid
IV. Streptomycin
V. Ethambutol

A. IV and V
B. II and V
C. Vonly
D. NOTA

Primary Anti-TB Drugs: /soniazid, Streptomycin, Rifampin, Ethambutol **Secondary Anti-TB Drugs:** Ethionamide, Capreomycin, Cyc/oserine, Kanamycin, Pyrazinamide

36. A positive Simmon's Citrate test is seen as a:
A. Blue color
B. Red color
C. Yellow color
D. Green color

Citrate Utilization Test Expected Results:

Positive: Growth on the medium, with or without a change in the color of the indicator. Growth typically results in the bromthymol blue indicator turning from green to blue

Negative: Absence of growth

37. MRVP broth is inoculated and incubated for 48 hours. What 2 reagents must be added to determine if the bacterium is VP positive?
A. Creatinine and 1 N HCl
B. 10% FeCl3 and alpha-naphthol
C. Kovac's reagent and zinc dust
D. Alpha-naphthol and 40% KOH

Voges-Proskauer Test: In some bacteria, acids formed during fermentation can be further metabolized to 2, 3-butanediol through the intermediate acetoin. After incubation, first a-naphtha/ is added as a catalyst or color intensifier. Next 40% KOH or NaOH is added.

38. Based on these results: Mannitol fermentation(+), ODC (-), ONPG Variable, Serotype C, which of the following Shigella species is being described?
A. Shigella dysenteriae
B. Shigella boydii
C. Shigella flexneri
D. Shigella sonnei

Only S. dysenteriae does not ferment mannitol. Only S. sonnei is ODC (+). S. flexneri is Serogroup B.

39. Haemophilus ducreyi requires Factor X but not Factor V. Haemophilus parainfluenzae requires Factor V but not Factor X.
A.Both statements are correct
B.Only the first statement is correct
C. Both statements are incorrect
D. Only the second statement is correct

Factor X+, V+ : H. influenzae H. haemolyticus
Factor X-, V+ : H. parainfluenzae H. parahaemolyticus H. paraphrohaemolyticus A. segnis
Factor X+, V-: H. ducreyi
Factor X-, V-: A. aphrophilus

40. Kingella kingae is usually associated with which type of infection?
A. Middle ear infection
B. Meningitis
C. Endocarditis
D. Urogenital

Members of the HACEK group of gram-negative bacilli are known causes of endocarditis and will grow well in blood culture bottles, but may require extended incubation times to be detected.

41. John developed ear infection ever since a minute amount of water was stuck in his ear from hot tub, test shows non fermenter gram negative bacilli. What is the suspected organism causing the infection?
A. Mycobacterium xenopi
B. Pseudomonas aeruginosa
C. Legionella pneumophila
D. Moraxella catarrhalis

Other Jess conditions associated with P. aeruginosa are otitis externa, particularly in swimmers or divers; a necrotizing skin rash, referred to as Jacuzzi or hot tub syndrome, that develops in users of these recreational activities.

42. Which of the following statements is true?
A. All flukes have snail as their second intermediate host
B. All flukes have one body with both sexual organs
C. All flukes have circulatory system
D. None of the above

All flukes have snail as their first intermediate host. In the life cycle of trematodes, eggs hatch in freshwater releasing the larvae and these larvae must find its way into the snail (intermediate host) through penetration into the snail tissue or the snail ingests the eggs before they hatch. Typical characteristic of flukes is the absence of circulatory and respiratory system.

Schistosomes are dioecious (separate sexes) blood flukes.

43. Which of the following are characteristics of the K antigen?
I. Heat-Labile
II. Heat-Stable
III. Polysaccharide
V. Lipopolysaccharide

A. I, III
B. I, IV
C. 11, III
D. 11, IV

K antigen - Heat labile, polysaccharide, removed by heating

44. A sputum sample was brought to the laboratory for analysis. Gram stain revealed the following: 10-15 epithelial cells per low-power field, 8-10 WBCs/ LPF, and pleomorphic Gram-negative rods. Which of the following interpretations should you make?

A. There is no evidence of inflammatory response
B. Culture the specimen to identify the bacteria seen
C. The patient has pneumococcal pneumonia
D. Ask the patient to recollect sputum sample

Expectorated sputum in which the Gram stain reveals fewer than 25 white blood cef/s (WBCs) and more than 10 epithelial cef/s per /ow-power field (LPF) and mixed bacterial flora sha/1 be rejected.

45. If a Quellung test was done on the following bacterial isolates, which one would you expect to be positive?
A. Shigella spp.
B. Streptococcus Qneumoniae
C. Haemophilus parainfluenzae
D. Corynebacterium diphtheriae

The Que/lung Test (Capsular Swef/ing Test) determines the presence of bacterial capsules. Capsules of S. pneumoniae swe/1 in the presence of specific pneumococca/ anti-serum.

46. Staphylococcus aureus has a distinctive appearance on which one of the following media?
A. Sheep Blood Agar
Modified Thayer-Martin Agar
Thiosulfate Citrate Bile Salts Agar
Lowenstein-Jensen Medium

S. aureus grows very we// on sheep blood agar. Colonies present a beta-hemolytic pattern on sheep blood agar

47. Cations contained in the antimicrobial susceptibility testing are significant when testing Pseudomonas aeruginosa against:
A. Nalidixic Acid
B. Gentamicin
C. Tetracycline
D. Polymyxin B

Aminog/ycoside (Gentamicin, Tobramycin, Kanamycin) activity is affected by the concentration of cations such as Ca^{++} and Mg^{++} in the environment. This effect Is most notable with P. aeruginosa. Aminog/ycoside molecules have a net positive charge facilitating the attachment of the drug to the surface of P. aeruginosa having a net negative charge. However, calcium and magnesium compete with aminogfycosides for negatively charged binding sites on the ce/1 surface. ff cations outcompete aminog/ycoside molecules these sites, antimicrobial activity wi/1 be diminished.

48. Hepatitis D virus is a defective virus that can replicate only in cells already infected with which of the following viruses?

A. Hepatitis A Virus
B. Epstein-Barr Virus
C. Hepatitis C Virus
D. Hepatitis B Virus

Hepatitis D (delta-agent; HOV) is an RNA virus that can replicate only in the presence of HBsAg.

49. Aerobic, Gram-negative bacilli, EXCEPT:
A. Bacteroides
B. Bordetella
C. Brucella
D. Campylobacter

GRAM-POSITIVE COCCI

Aerobic: Micrococcus, Staphylococcus, Streptococcus
Anaerobic: Finegoldia, Peptostreptococcus, Peptococcus

GRAM-NEGATIVE COCCI

Aerobic: Branhamella, Neisseria, Moraxella
Anaerobic: Veilonella

GRAM-POSITIVE BACILLI

Aerobic: Bacillus, Corynebacterium, Erysipelothrix, Listeria
Anaerobic: Actinomyces, Clostridium, Propoinobacterium

GRAM-NEGATIVE BACILLI

Aerobic: Acinetobacter, Aeromonas, Bordetella, Brucella, Enterobacteriaceae, Francisella, Legionella, Pasteurella, Pseudomonas, Vibrio, Campylobacter, Helicobacter

Anaerobic: Fusobacterium, Bacteroides, Prevotella, Phorphyromonas

50. The following are mechanisms of gene transfer, EXCEPT:
A. Replication
B. Conjugation
C. Transduction
D. Transformation

MECHANISMS OF GENE TRANSFER

CONJUGATION

Occurs between two living cells, involves CELL TO CELL CONTACT, and requires mobilization of the donor bacterium's chromosome. It may be by through:

Conjugation by CHROMOSOME TRANSFER . The sex pilus originates from the donor and establishes a conjugative bridge that serves as the conduit for DNA transfer from donor to recipient cell.

Conjugation by _PLASMID TRANSFER. Genes encoded in extrachromosomal genetic elements, such as plasmids and transposons, may be transferred.

TRANSDUCTION

DNA from two bacteria may come together in one cell, allowing RECOMBINANT.
The newly infected cell is the recipient of donor DNA introduced by the BACTERIOPHAGE , and recombination between DNA from two different cells occurs.

TRANSFORMATION

Involves recipient cell uptake of naked (free) DNA released into the environment when another bacterial cell dies and undergoes lysis.

COMPLEMENT bacteria can take up naked DNA from their surroundings and are able to undergo transformation.

51. During what phase do bacteria have the highest metabolic activity but without cell division?
A. Lag phase
B. Log phase STAGES OF BACTERIAL GROWTH
C. Stationary phase
D. Death phase

LAG PHASE/ ADJUSTMENT

Cells are depleted of metabolites and enzymes as the result of the unfavorable conditions from their previous culture, adapt to their new environment.
Phase with the highest metabolic activity without cell division.

LOG PHASE/ EXPONENTIAL

The cells are in a steady state and increase logarithmically. Phase where growth is at its fastest and is considered the best time to introduce antibiotics.

STATIONARY PHASE/ PLATEU

Total cell count slowly increases, and viable count stays constant.

DEATH PHASE/ DECLINE

Cell turnover takes place where there is a slow loss of cells through death, which is balanced by formation of new cells through growth and division.

52. Bacteria that do not require oxygen for growth but can tolerate its presence:
A. Obligate aerobes
B. Aerotolerant anaerobes
C. Obligate anaerobes
D. Microaerophiles

Obligate aerobe

- Require the presence of O2
- 21% O2, 0.03% CO2

Obligate anaerobe

- Require the absence of O2
- 80-90% N2, 5-10% H2, 5-10% CO2

Aerotolerant Anaerobe

- Survive but does not require O2
- 85% N2, 10% H2, 5% CO2

Capnophiles

- Require increased concentration of CO2
- 5-10% CO2 and 15% O2

Microaerophiles

- Required reduced concentration of O2
- 8-10% CO2 and 5-10% O2

53. Most pathogenic bacteria are:
A. Neutralophile, mesophilic
B. Neutralophile, thermophilic
C. Acidophile, mesophilic
D. Alkaliphile, thermophilic

Most pathogenic bacteria grow best at a neutral pH NEUTRALOPHILES of pH 6.0 to 8.0.
Acidophiles have optima as low as pH 3.0, and
alkaliphiles have optima as high as pH 10.5.

Psychrophilic

Low temperatures between -20 to 20°C with an optimal temperature of 15°C

Psychotrophic

Low temperatures between 0 to 40°C with an optimal temperature between 20 to 40°C

Mesophilic

Moderate temperatures between 30 to 37°C

Thermophiles

High temperatures between 50 to 60°C

Hyperthermophilic

Temperatures higher than 100°C

54. The following are TRUE regarding the structure of eukaryotic organisms:
A. Replicate via binary fission
B. Site of protein synthesis takes place in free ribosomes
C. Phospholipid bilayer without cholesterol and sterol component
D. Phospholipid bilayer with cholesterol and sterol component

COMPARISON OF PROKARYOTIC AND EUKARYOTIC STRUCTURE

EUKARYOTES "TRUE NUCLEUS"

- -Phospholipid bilayer with cholesterol and sterol component
- MITOSIS
- Mitochondria
- Rough endoplasmic reticulum

PROKARYOTES "_PRE NUCLEUS"

- Phospholipid bilayer without cholesterol and sterol component
- BINARY FISSION
- Cytoplasmic membrane
- Free ribosomes

55. Bacterial cell component typically found only in Gram-negative bacteria:
A. Periplasmic space
B. Cell wall
C. Cytoplasmic membrane
D. Capsule

BACTERIAL CELL COMPONENTS IN THE CELL ENVELOPE

Outer membrane (OM) Gives the surface of GNB a net NEGATIVE charge

- Primary permeability barriers to hydrophilic and hydrophobic compounds and contain essential enzymes and other proteins located in the periplasmic space.
- Scattered throughout the lipopolysaccharide macromolecules are protein structures called PORINS, which are waterfilled structures that control the passage of nutrients and solutes, including antibiotics.

Lipopolysaccharide (LPS)

- The LPS of gram-negative cell walls consists of a complex glycolipid, called LIPID A , which is attached a polysaccharide made up of a core and a series of repeat units.

Cell wall (CW)

- Provides the bacterial cell shape and strength to withstand changes in environmental osmotic pressures.

Periplasmic space

- Contains the murein layer which consists of gel-like substances that assist in the capture of nutrients from the environment and several enzymes involved in the degradation of macromolecules and detoxification of environmental solutes.

Cytoplasmic membrane

- Serves as an additional osmotic barrier and is functionally like the membranes of several eukaryotic cellular organelles.

56. The following are features of a Gram-positive cell wall, EXCEPT:
A. Thick peptidoglycan layer
B. Presence of porin proteins
C. Susceptible to penicillin
D. Absence of periplasmic space

57. Cellular appendage that may consist of a monomicrobic or polymicrobic group of bacteria housed in a complex extracellular polymer biochemical matrix:
A. Capsule
B. Slime layer
C. Pili
D. Flagella

CELLULAR APPENDAGES

CAPSULE: Does not function as an effective permeability barrier, but it protects bacteria from attack by components of the immune system.
SLIME LAYER: Stabilizes the cell to protect the organism from hydrodynamic forces in the host and plays a protective role against the host's immune system.
PILI: · Composed of structural protein subunits termed PILINS. ·
Minor proteins termed adhesins are located at the tip and are responsible for the attachment properties.
FLAGELLA: Complex structures composed of the protein FLAGELLIN.
These structures are responsible for bacterial motility.

58. Flagella located at the entire surface of the cell:
A. Peritrichous flagella
B. Periplasmic flagella
C. Atrichous flagella
D. Amphitrichous flagella

FLAGELLAR ARRANGEMENTS

Atrichous : Absence of flagella
Monotrichous: Flagella located at one end of the cell
Lopotrichous: Flagella located at both ends of the cell
Ampitrichous: Single flagellum located at both ends
Periplasmic: Endoflagella or axial filaments

59. Pili that plays a role in the adherence of symbiotic and pathogenic bacteria:
A. Ordinary pili
B. Sex pili
C. Both ordinary and sex pili
D. Neither ordinary nor sex pili

ORDINARY PILI

Responsible for the adherence of symbiotic and pathogenic bacteria to host cells.

SEX PILI

Responsible for the attachment of donor and recipient cells in bacterial conjugation.

60. What is the most common mode of transmission for transient microbiota in carrier states?
A. Inoculation of a person's hands or fingers with the microorganism
B. Inhalation of respiratory droplets containing the microorganism
C. Ingestion of contaminated food or water sources
D. Insect bite of a microorganism-carrying arthropod

61. The following are features of an exotoxin, EXCEPT:
A. Present only in Gram-negative
B. Detoxified by formaldehyde
C. Complete neutralization by antibody
D. Minute doses for activation

62. Why are infections involving human bites difficult to treat?
A. There are not enough resources to isolate microorganisms from the mouth.
B. There are many different microorganisms in the oral biota making isolation difficult.
C. There are limited studies involving human bites and their possible implications.
D. Only animal bites can cause infections.

63. The ability of a microorganism to cause disease:
A. Pathogenicity
B. Virulence
C. Both pathogenicity and virulence
D. Neither pathogenicity nor virulence

VIRULENCE
- Refers to the severity of a pathogen to cause infection and fight against the host's defenses.
- Quantitative in nature; factors may control the amount of degree to which the pathogen causes damage, invasion, and infectivity
- The most common measurement is the ability of the pathogen to cause death of the infected host.

PATHOGENICITY
- Refers to the ability of a pathogen to cause infection to its host during host-pathogen interaction.
- Qualitative in nature; factors may be responsible for producing the disease in the first place.
- Measured by virulence factors which enhance the ability of pathogens to evade their host's defense.

64. The following are factors that influence the degree of killing microorganisms:
I. Types of organisms
II. Concentration of disinfecting agent
III. Contact time of disinfecting agent
IV. Presence of organic materials

A. I and III
B. II and IV
C. IV only
D. I, II, III, IV

TYPES OF ORGANISMS
Organisms differ greatly in their ability to withstand treatment.

CONCENTRATION OF DISINFECTING AGENT
Proper concentrations of disinfecting agents ensure the inactivation of target microorganisms.

CONTACT TIME OF DISINFECTING AGENT
The amount of time a disinfectant or sterilant is in contact with the object is critical. Too little contact time does not allow the agent to work properly.

PRESENCE OF ORGANIC MATERIALS
Organic material, such as blood, mucus, and pus, affects killing activity by inactivating the disinfecting agent.

65. The most resistant microorganism in disinfection and sterilization:
A. Prions
B. Lipid viruses
C. Bacterial spores
D. Vegetative bacteria

PRIONS (most resistant) → bacterial spores → Mycobacteria spp. → nonlipid viruses → fungi → vegetative bacteria → LIPID VIRUSES (least resistant)

66. The process that kills all forms of microbial life, including bacterial endospores:
A. Sterilization
B. Disinfection
C. Decontamination
D. Sanitation

67. The removal of pathogenic microorganisms, so items are safe to handle or dispose:
A. Sterilization
B. Disinfection
C. Decontamination
D. Sanitation

68. Biological sterilization indicator for an autoclave:
A. Geobacillus stearothermophilus
B. Bacillus subtilis var. niger
C. Bacillus pumilus
D. Bacillus atrophaeu

69. Pore size best for critical sterilization:
A. 0.01 µm
B. > 0.3 µm
C. 0.22 µm
D. 0.45 µm

0.01 um: Pore size that can retain small viruses.
>0.3 um: Pore size for HEPA filters used in isolation rooms and biologic safety cabinets (BSCs).
0.45 um: Pore size that can retain most bacteria, yeasts, and molds.

70. A method of treating infectious waste where hazardous material is burned to ashes:
A. Autoclave
B. Incineration
C. Inspissation
D. Dry heat

71. Method used to sterilize items such as glassware:
A. Autoclave
B. Incineration
C. Inspissation
D. Dry heat

PHYSICAL METHODS OF HEAT STERILIZATION

Autoclave (MOIST heat)
- 121°C for 15 minutes (15 psi)
- Sterilizes and kills endospores

Incineration
- 870 to 980 °C
- Kills and destroys infective materials

Inspissation
- 75-80°C for 2 hours at 3 days
- Sterilize protein containing media

Oven (DRY heat)
- Sterilizes; keeps materials dry
- 160-180°C for 1.5-3 hours

72. Treatment used to reduce spoilage of food without affecting its taste or damaging the nutritional value:
A. Boiling
B. Low temperature, long time pasteurization (LTLT)
C. High temperature, short time pasteurization (HTST)
D. Nonionizing radiation

73. One of the oldest and most commonly used disinfectants:
A. Ethyl alcohol
B. Glutaraldehyde
C. Iodophor
D. Sodium hypochlorite

74. Most commonly used gas chemical sterilant:
A. Hydrogen peroxide
B. Ethylene oxide
C. Peracetic acid
D. Phenolics

75. Classically used to prevent gonococcal conjunctivitis in newborns:
A. Silver nitrate, 1%
B. Chlorohexidine gluconate, 0.5-4%
C. Hexachlorophene, 3%
D. Chloroxylenol, 0.5-4%

Silver nitrate (1% eye drop solution) had been used as a prophylactic treatment to prevent GONOCOCCAL CONJUNCTIVITIS caused by Neisseria gonorrhoeae in newborns. It has been largely replaced by erythromycin or povidone-iodine drops.

76. Single most useful technique to prevent the transmission and acquisition of infection in a health care setting:
A. Handwashing
B. Personal protective equipment (PPE)
C. Engineering controls
D. Universal precautions

ETHYL ALCOHOL
- Inactivated by the presence of organic material.
- To be effective, they must be allowed to EVAPORATE from the surface to which they were applied.

GLUTARALDEHYDE
- It does not corrode lenses, metal, or rubber; therefore, it is the sterilizer of choice for medical equipment that is not heat-stable and cannot be autoclaved as well as for material that cannot be sterilized with gas.

SODIUM HYPOCHLORITE
- 1:10 dilution of a 5.25% concentration of sodium hypochlorite is recommended by the CDC for cleaning up BLOOD SPILLS.

ETHYLENE OXIDE

The recommended concentration is 450 to 700 mg of ethylene oxide per liter of chamber space at 55-60°C for 2 hours.

HYDROGEN PEROXIDE
- The major advantage is its ability to act with a shorter contact time.
- The combination of H2O2 and peracetic acid vapors is used in the pharmaceutical and medical device manufacturing industries.

IODOPHOR
- TINCTURES are alcohol and iodine solutions, used mainly as antiseptics.
- IODOPHORE is a combination of iodine and a neutral polymer carrier that increases the solubility of the agent.

PHENOLICS
- Main use in the disinfection of hospital, institutional, and household environments. Commonly found in germicidal soaps.

77. Risk group that involves high individual risk and low community risk:
A. Risk group I
B. Risk group II
C. Risk group III
D. Risk group IV

78. Biosafety cabinet that requires air inlets and uses two (2) HEPA filters:
A. BSC Class I
B. BSC Class II, A
C. BSC Class II, B1
D. BSC Class III

BIOSAFETY CABINETS (BSC) AIRFLOW PATTERNS

I: In at front; rear and top through HEPA filter (OPEN FRONT)
II, A:70 % recirculated through HEPA; exhaust through HEPA
II, B1: 30% recirculated through HEPA; exhaust via HEPA and hard-ducted
II, B2 : No recirculation; total exhaust via HEPA and hard-ducted
II, B3: Same as IIA, but plenums under NEGATIVE PRESSURE to room and exhaust air is ducted

79. The following are true regarding swabs for specimen collection:
A. Dacron and Rayon are recommended for fungal collection and genital swabs.
B. Calcium alginate is recommended in viral and bacterial collection.
C. Plastic swabs are not ideal for viral cultures.
D. Cotton swabs have excessive fatty acids which is toxic to certain bacteria.

80. The following are functions of 0.025% to 0.050% sodium polyanethol sulfonate (SPS), EXCEPT:
A. Functions as an anticoagulant
B. Prevents phagocytosis
C. Prevents complement activation
D. Neutralizes penicillin antibiotics

0.025% to 0.050% sodium polyanethol sulfonate (SPS) functions as an anticoagulant and prevents phagocytosis and complement activation. SPS also neutralizes AMINOGLYCOSIDE antibiotics.

81. Used as a remedy to neutralize materials that are toxic to sensitive pathogens:
A. Charcoal
B. SPS, 0.025% to 0.050%
C. Gelatin, 1.2%
D. NSS, 0.9%

82. Used to eliminate the inhibitory effect of SPS towards Neisseria and Peptostreptococcus:
A. Charcoal
B. SPS, 0.025% to 0.050%
C. Gelatin, 1.2%
D. NSS, 0.9%

83. The following specimens are stored at refrigeration temperature, EXCEPT:
A. CSF for viruses
B. Outer ear
C. Unpreserved feces
D. Preserved urine

SPECIMEN STORAGE GUIDELINES

Refrigeration temperature : Catheter tips (IV), CSF for VIRUSES , OUTER ear, unpreserved feces and urine, sputum, feces for C. difficile toxin (up to 3 days), foreign devices

Room temperature : Body fluids, CSF for BACTERIA ,INNER ear preserved feces and urine, genital, nasal, oropharyngeal, throat, tissue, abscess, lesion, wounds

84. Specimen priority level for critical/invasive samples:
A. Level I
B. Level II
C. Level III
D. Level IV

FOUR-LEVEL SCHEME OF SPECIMEN PRIORITIZATION

LEVEL I: Critical/invasive specimens (i.e., amniotic fluid, CSF, blood, heart valves, serous fluid)
LEVEL II: Unpreserved specimens (i.e., sputum, tissue, feces, drainage from wounds, bone, body fluids)
LEVEL III: Quantitation required (i.e., catheter tip, urine, tissue for quantitation)
LEVEL IV: Preserved specimens (i.e., urine and feces in preservatives, swabs in holding medium)

85. Specimen of choice for the detection of Bordetella pertussis:
A. Sputum, expectorated
B. Nasopharyngeal swab
C. Sputum, induced
D. Blood culture

86. The following microorganisms may be seen using a Bright-Field microscope, EXCEPT:
A. Bacteria
B. Fungi
C. Parasites
D. Viruses

87. The condenser of this microscope does not allow light to pass directly through the specimen but directs the light to hit the specimen at an oblique angle:
A. Bright-Field microscope
B. Phase-contrast microscope
C. Dark-Field microscope
D. Electron microscope

88. Requires a wet mount preparation instead of a fixed smear preparation:
A. Bright-Field microscope
B. Phase-contrast microscope
C. Dark-Field microscope
D. Electron microscope

89. Allows magnifications of more than 100,000,000:
A. Bright-Field microscope
B. Phase-contrast microscope
C. Dark-Field microscope
D. Electron microscope

90. What is the minimum concentration required to visualize bacterial cells by Light microscopy?
A. 103 cells per 1 ml of specimen
B. 104 cells per 1 ml of specimen
C. 105 cells per 1 ml of specimen
D. 106 cells per 1 ml of specime

BRIGHT FIELD MICROSCOPY
A minimum concentration of 105 cells per 1 ml of specimen
FLUORESCENT MICROSCOPY
A minimum concentration of 104 cells per 1 ml of specimen

91. Permanent loss of fluorescence due to chemical damage towards the fluorochrome:
A. Photobleaching
B. Fading
C. Quenching
D. Both A and B

QUENCHING is a result of the transfer of the light energy to nearby molecules in the sample such as free radicals, salts of heavy metals, or halogens. PHOTOBLEACHING OR FADING is the permanent loss of fluorescence because of chemical damage to the fluorochrome.

92. Gram-stained smears:
A. Screen at 100x; examine at 1000x
B. Screen at 400x; examine at 1000x
C. Screen at 10x; examine at 100x
D. Screen at 100x; examine at 400x

93. What is the main difference between the Hucker's and Carbol fuchsin method for Gram staining?
A. Primary stain
B. Mordant
C. Decolorizer
D. Counterstain

94. The following are true regarding acid-fast staining, EXCEPT:
A. For bacteria whose cell walls contain mycolic acids
B. Long-chain fatty acids render the cells resistant to decolorization
C. Bacteria stained are referred to as acid-fast bacteria
D. Bacteria stain blue against a red background

95. What is the main difference between the Ziehl-Neelsen and Kinyoun method for Acid-fast staining?
A. Primary stain
B. Mordant
C. Decolorizer
D. Counterstain

METHODS OF ACID-FAST STAINING AND ITS APPLICATIONS

ZIEHL-NEELSEN (HOT)

Primary stain: Carbol fuchsin
Mordant : STEAM/ HEAT (3-5 MINUTES AT 60'C
Decolorizer : Acid alcohol (95% ethanol, HCl)
Counterstain : Methylene blue
Application: Staining by carbolfuchsin is further enhanced by steam heating the smear to melt the wax and allow the stain to move inside the cell.

KINYOUN (COLD)

Primary stain: Carbol fuchsin
Mordant: Tergitol no.7 detergent
Decolorizer : Acid alcohol (95% ethanol, HCl)
Counterstain: Methylene blue
Application: Uses a slightly more lipid soluble and concentrated carbolfuchsin allowing the stain to penetrate the bacterial cell walls without the use of heat.

96. Fluorescent dye that binds to nucleic acid:
A. Acridine orange
B. Auramine-rhodamine
C. Calcofluor white
D. Fluorescein isothiocyanate

97. Fluorescent dye that binds to cellulose and chitin in the cell wall of fungi:
A. Acridine orange
B. Auramine-rhodamine
C. Calcofluor white
D. Fluorescein isothiocyanate

98. Culture media can be classified based on the following, EXCEPT:
A. Based on consistency
B. Based on composition
C. Based on function
D. All of the above are correct

Based on consistency

Liquid media, solid media, semi-solid media

Based on composition

Synthetic media, non-synthetic media, living tissue media

Based on function

Nutritive media, enrichment media, differential media, selective media

99. Trichuris trichiura, hookworm, and _____ are the unholy "three" of roundworm. a. Enterobius vermicularis
b. Ascaris lumbricoides
c. Taenia saginata
d. Hymenolepsis nana

100. Malabsorption syndrome is associated with this parasite:
a. Enterobius vermicularis
b. Necator americanus
c. Trichuris trichiura
d. Capillaria philippinensis

101. Which stage of Trichuris trichiura is infective to humans?
a. Rhabditiform larva
b. Filariform larva
c. Cyst
d. Embryonated egg

102. Which of the following roundworms is capable of autoinfection, hyperinfection, and a heavy worm burden with characteristic larval migration required in the life cycle? a. Ancylostoma duodenale
b. Enterobius vermicularis
c. Strongyloides stercoralis
d. Ascaris lumbricoides

103. The mouth of Necator americanus is characterized by the presence of:
a. Teeth
b. Cutting plates
c. Both of these
d. None of these

104. A patient has manifested vague abdominal pains and a microcytic hypochromic anemia. A possible causative parasite is:
a. Enterobius vermicularis
b. Ancylostoma duodenale
c. Brugia malayi
d. Trichinella spiralis

105. Visceral Larva Migrans (VLM) and Ocular Larva Migrans (OLM) are caused by accidental ingestion of eggs of:
a. Ancylostoma braziliense, Ancylostoma caninum
b. Toxocara cati, Toxocara canis
c. Angiostrongylus braziliense, Angiostrongylus caninum
d. Trypanosoma cati, Trypanosoma canis

106. Which of the following is associated with Loeffler's syndrome:
a. Ascaris lumbricoides
b. Enterobius vermicularis
c. Trichuris trichiura
d. Wuchereria bancrofti

107. Habitat of the Trichinella spiralis larva:
a. Small intestines
b. Skeletal muscles
c. Blood
d. CSF

108. Infective stage is the unsheathed filariform larva:
a. Strongyloides stercoralis
b. Ancylostoma duodenale, Necator americanus
c. Ascaris lumbricoides
d. Trichinella spiralis

109. Adults of filarial worms live in:
a. Blood and feces
b. Urine and lymphatics
c. Subcutaneous tissues
d. Lymphatics and subcutaneous tissues

110. Lymphatic vessel involvement within the retroperitoneal region is associated with: a. Brugia malayi
b. Loa loa
c. Onchocerca volvulus
d. Wuchereria bancrofti

111. Loa loa is transmitted to humans by:
a. Culex spp.
b. Simulium spp.
c. Mansonia spp.
d. Chrysops spp.

112. Sheathed, tail free of nuclei:
a. Brugia malayi
b. Loa loa
c. Onchocerca volvulus
d. Wuchereria bancrofti

113. Removal and gradual retraction of the adult gravid female worm is recommended in infections with:
a. Ancylostoma braziliense
b. Dracunculus medinensis
c. Trichinella spiralis
d. Toxocara cati

114. Which of the following is the only ciliate that is pathogenic in humans?
a. Babesia
b. Isospora
c. Balantidium coli
d. Entamoeba coli

115. For reproduction of the trophozoite of Balantidium coli:
a. Micronucleus
b. Macronucleus
c. Both of these
d. None of these

116. A pear-shaped flagellate with jerky motility
a. Trichomonas hominis
b. Trichomonas vaginalis
c. Escherichia coli
d. Leptospira

117. Which of the following protozoa have an undulating membrane?
a. Trichomonas
b. Trypanosoma
c. Chilomastix
d. Trichomonas and Trypanosoma

118. Which hemoglobin is incompatible with malaria parasite survival?
a. Hb CC
b. Hb F
c. Hb SS
d. Hb A

119. What is the infective stage of malarial parasite to humans?
a. Gametocytes
b. Cryptozoites
c. Schizonts
d. Sporozoites

120. The sexual reproduction cycle in Plasmodium and coccidian is referred to as:
a. Sporogony
b. Schizogony
c. Sporocyst
d. None of the above

121. Schizont resembles a "fruit pie" in which the merozoites form a rosette around the malarial pigment:
a. Plasmodium malariae
b. Plasmodium vivax
c. Plasmodium ovale
d. Plasmodium falciparum

123. Which malarial organism has large, coarse, red dots within a large, pale red blood cell with fimbriated edges?
a. Plasmodium vivax
b. Plasmodium falciparum
c. Plasmodium ovale
d. Plasmodium malariae

124. Band form trophozoite stretching across the red blood cell:
a. Plasmodium malariae
b. Plasmodium ovale
c. Plasmodium vivax
d. Plasmodium falciparum

125. In which type of malaria is there synchronized rupture of the red blood cells every 72 hours?
a. P. falciparum
b. P. ovale
c. P. vivax
d. P. malariae

126. Which of the malarial organisms preferentially invades reticulocytes?
a. Plasmodium falciparum
b. Plasmodium malariae
c. Plasmodium vivax
d. All of the above

127. Acquired by ingestion of crab or crayfish bearing the metacercaria:
a. Fasciola hepatica
b. Fasciolopsis buski
c. Clonorchis sinensis
d. Paragonimus westermani

128. The eggs are unembryonated and operculated:
a. Clonorchis
b. Heterophyes
c. Opisthorchis
d. Fasciolopsis

129. Eggs of this parasite can be found in sputum:
a. Ascaris lumbricoides
b. Paragonimus westermani
c. Both of these
d. None of these

130. Which of the following worms have separate sexes?
a. Intestinal flukes
b. Liver flukes
c. Tapeworms
d. Blood flukes

131. A schistosoma egg with a terminal spine would be most likely found in which of the following?
a. Feces
b. Bile
c. Sputum
d. Urine

132. To optimize recovery of S. haematobium in urine, the specimen should be collected: a. Early morning
b. Between noon and 2 pm
c. Between 2 pm and 4 pm
d. Between 10 pm and 2 am

133. What is a schistosomule?
a. Cercaria
b. Cercaria minus tail
c. Free-swimming cercaria
d. Metacercaria

134. A diagnostic characteristic of the egg of Schistosoma mansoni is:
a. A large lateral spine
b. No spine
c. A pointed terminal spine
d. A small lateral spine

135. Which of the following is found in the intermediate host of Echinococcus granulosus? a. Adult worm
b. Egg
c. Hydatid cyst
d. Pseudocyst

136. Infective stage for humans in D. latum life cycle:
a. Cysticercus
b. Cysticercoid
c. Procercoid
d. Plerocercoid

137. Gravid proglottids resemble rice grains or cucumber seeds:
a. Diphyllobothrium latum
b. Dipylidium caninum
c. Taenia spp.
d. Hymenolepis nana

138. A tapeworm with almond-shaped or spoon-shaped scolex is:
a. Taenia saginata
b. Taenia solium
c. Dipylidium caninum
d. Diphyllobothrium latum

139. Which of the following can bypass the need for an intermediate host?
a. Diphyllobothrium latum
b. Dipylidium caninum
c. Hymenolepis diminuta
d. Hymenolepis nana

140. Humans can be both the intermediate and the definitive host of:
a. Taenia saginata
b. Taenia solium
c. Echinococcus granulosus
d. Diphyllobothrium latum

141. Use solutions of lower specific gravity than the parasitic organisms:
a. Flotation techniques
b. Sedimentation techniques
c. Both of these
d. None of these

142. Direct examination of stool specimens stained with iodine make the trophozoite of the protozoa stain what color?
a. Yellow
b. Brown
c. Trophozoites are destroyed by iodine
d. Do not stain

143. The modified acid-fast stain is most often used in parasitology to identify:
a. Protozoan cysts and trophozoites
b. Helminth eggs
c. Plasmodium
d. Cryptosporidium and other coccidian

144. Specific gravity of zinc sulfate solution for the flotation method:
a. 1.01
b. 1.04
c. 1.18
d. 1.48

145. The ideal temperature at which to hold a fecal specimen for more than 1 hour is:
a. Freezer temperature
b. Refrigerator temperature
c. Room temperature
d. Incubator temperature

146. Eggs contain a six-hooked oncosphere with the absence of polar filaments in the space between the oncosphere and the eggshell:
a. Hymenolepis diminuta
b. Hymenolepis nana
c. Taenia saginata
d. Taenia solium

147. Cysticercosis is caused by the disseminated larva of:
a. Hymenolepis nana
b. Hymenolepis diminuta
c. Taenia saginata
d. Taenia solium

148. Which tapeworm cannot be identified to the species level based on its egg morphology; instead, proglottids must be examined?
a. Diphyllobothrium
b. Dipylidium
c. Hymenolepis
d. Taenia

149. Microfilariae are usually not found circulating in the peripheral blood.
a. Mansonella ozzardi
b. Wuchereria bancrofti
c. Onchocerca volvulus
d. Loa loa

150. Microsporidia primarily infects:
a. Urinary Tract
b. GIT
c. Lungs
d. Subcutaneous tissues

151. Earlyring stages of the fifth human malaria, causing Simian Malaria, resemble those of:
a. Plasmodium malariae
b. Plasmodium ovale
c. Plasmodium falciparum
d. Plasmodium vivax

152. CapableofInternal Autoinfection:
a. Giardia lamblia and Cystoisospora belli
b. Cryptosporidium spp. and Giardia lamblia
c. Cystoisospora belli and Strongyloides stercoralis
d. Cryptosporidium spp. and Strongyloides stercoralis

153. What structure has a whip-like movement in a paramecium?
A. Flagella
B. Spore
C. Cilia
D. Pseudopodia

Paramecium swims in fresh water by beating its thousands of cilia, and feeds on smaller microorganisms such as bacteria and algae. It is a prey for other microorganisms such as Didinium.

154. Most likely to be infected with Giardia lamblia
A. hikers who drink untreated water from streams
B. trekkers during the rainy season
C. young child playing with soil
D. family with perianal itching

Giardia lamblia is acquired through fecal-oral route and most commonly by the ingestion of contaminated water. It is not transmitted through mosquito bites, infected soil contact or inhalation.

155. If the ova of this parasite is ingested by humans, the oncosphere form can migrate through the body via the bloodstream, resulting in a condition known as cysticercosis. Which of the following is correct?
A. Taenia solium
B. Hymenolepis nana
C. Clonorchis sinensis
D. Entamoeba histolytica

Man may also be an intermediate host of T. solium. Taenia eggs are very resistant and when the eggs are ingested, development to cysticerci ensues as it does in pigs. The oncosphere hatches in the duodenum, and spreads to different organs through the bloodstream. This results in human cysticercosis.

156. Preferred stool specimen for Giardiasis
A. Fluffy
B. Formed
C. Soft
D. Diarrheic

Diarrheic is the preferred stool specimen for Giardiasis because it allows the medical technologist to observe its movement as well as characteristics.

157. Which intestinal protozoa has an uncoordinated, rhythmic pattern and is described to have a macro and micronucleus?
A. C. mesnili
B. G. duodenalis
C. B. coli
D. E. histolytica

B. coli has two dissimilar nuclei. The macronucleus is usually bean-shaped and can easily be identified in stained specimens, while the micronucleus is round and lies in the concavity of the macronucleus. It moves in an uncoordinated but rhythmic like pattern.

158. Which of the following parasites have migration through the lungs as part of their lifecycle?
A. Toxocara canis, Toxoplasma gondii, Blastocystis hominis
B. Loa loa, Wuchereria bancrofti, Brugia malayi
C. Necator americanus, Ancylostoma duodenale, Strongyloides stercoralis
D. Enterobius vermicularis, trichiura, Trichinella spiralis

Ascaris lumbricoides, Trichuris Necator americanus, Ancylostoma duodenale, and Strongyloides stercoralis all pass through the human lung during their life cycles.

159. Plasmodium species that are described to have large infected young RBCs, ameboid trophozoite, Schuffner's dot, and distributed worldwide.
A. Plasmodium falciparum
B. Plasmodium vivax
C. Plasmodium ovale
D. Plasmodium malariae

P. vivax has the widest geographic distribution and is the species most likely to be found in temperate climates. The invasion of a new group of RBCs begins on the third day. P. vivax usually invades young RBCs (reticulocytes) and therefore is characterized by enlarged infected RBCs, often up to double the normal size. A fine pink stippling known as Schüffner stippling (or dots) may be present in the cell. The young trophozoite is characterized by its ameboid appearance; by maturity, it usually fills the RBC, and golden-brown malarial pigment is present.

160. The only known human tapeworm with an operculum is:
A. Diphyllobothrium latum
B. Hymenolepis nana
C. Giardia lamblia
D. Schistosoma haematobium

Medically important known human tapeworms include Dipylidium caninum, Diphyllobothrium latum, Hymenolepis diminuta, Hymenolepis nana, Taenia saginata, and Taenia solium. D. latum is the only one with operculated ova.

161. The image below is a cyst found in a human fecal smear. The cyst measured about 12 mm in length and contained four nuclei and a rounded chromatoid bar. The patient had severe diarrhea and some blood in the stool. What is the most likely identification of this organism?
A. Endolimax nana
B. Entamoeba coli
C. Entamoeba histolytica
D. Iodamoeba butschlii

Entamoeba histolytica cysts measure approximately 12 to 15 microns in diameter. Morphologic features include a round shape, two to four nuclei, and a rounded chromatoid bar. Clinically, blood may be seen in stool samples of individuals with an E. histolytica infection.

162. Which microfilariae are usually NOT found circulating in peripheral blood?
A. Brugia malayi
B. Wuchereria bancrofti
C. Onchocerca volvulus
D. Loa loa

O. volvulus microfilariae are normally found in the fluid right under the outer layer of skin. Therefore, the skin snip is the proper specimen to examine.

163. Eye infections with Acanthamoeba spp. have most commonly been traced to:
A. Use of soft contact lenses
B. Use of hard contact lenses
C. Use of contaminated lens care solutions
D. Failure to remove lenses while swimming

The majority of eye infections with Acanthamoeba spp. have resulted from the use of contaminated eye care solutions, primarily the use of homemade saline. It is recommended that all solutions be discarded at the expiration date. Continued use may increase the risk of environmental contamination of the fluids.

164. The most prevalent helminth to infect humans is:
A. Ascaris lumbricoides, the large intestinal roundworm
B. Taenia saginata, the beef tapeworm
C. Enterobius vermicularis, the pinworm
D. Schistosoma mansoni, one of the blood flukes

The pinworm, E. vermicularis, is the most common parasitic infection throughout the world, and the eggs are infective within just a few hours. It has been said, "You either had the infection as a child, have it now, or will have it again when you have children."

165. Key characteristics of the thick film include:
A. The ability to see the parasite within the RBCs
B. The ability to identify the parasites to the species level
C. The examination of less blood than the thin blood film
D. The necessity to lake the RBCs during or prior to staining

With thick blood films, the RBCs must be ruptured/laked either prior to or during staining. Without laking the RBCs, the stained smears would be too thick or too dark to be able to visualize any morphology. In contrast, the thin blood film is fixed prior to/during staining to preserve the RBC morphology; the parasite morphology within the infected RBC can be reviewed for possible diagnosis to the species level. The thin film has a much smaller amount of blood than the thick blood film.

166. The INCORRECT match between organism and characteristic is:
A. Plasmodium malariae and fruit pie appearance
B. Chilomastix mesnili and Shepherd's crook and lemon shape
C. Brugia malayi and sheathed microfilariae
D. Hymenolepis nana and striated shell

H. nana has a thin eggshell containing a six-hooked embryo (oncosphere) and polar filaments that lie between the eggshell and the embryo. The striated eggshell is generally associated with the eggs of Taenia spp

167. The formalin-ether (ethyl acetate) concentration procedure for feces is used to demonstrate:
A. Motility of helminth larvae
B. Protozoan cysts and helminth eggs
C. Formation of amoebic pseudopods
D. Trophozoites

The ova and parasite examination contains three components: the direct wet film (demonstrates protozoan trophozoite motility), the formalin-ethyl acetate concentration (demonstrates protozoan cysts, coccidian oocysts, and helminth eggs), and the trichrome or iron hematoxylin–stained smear (confirms protozoan cysts and trophozoites).

168. Examination of ova in stool is a common way to diagnose infections caused by all EXCEPT one:
A. Necator americanus
B. Strongyloides stercoralis
C. Ascaris lumbricoides
D. Trichuris trichuira

Strongyloides stercoralis is not often recovered in the ovum stage in feces. The rhabditiform larval stage is the primary diagnostic stage for strongyloidiasis.

169. Which of the following is INCORRECTLY pair with the disease that it causes?
A. Leishmania braziliensis: mucocutaneous leishmaniasis
B. Leishmania donovani: Dumdum Fever
C. Leishmania tropica: Kala-azar
D. Leishmania leishmaniasis

Leishmania donovani complex causes visceral leishmaniasis, dumdum fever and Kalazar. It is common in Africa, India, Middle East, and Far East. Flulike symptoms resembling malariae, GI symptoms, abdominal pain, hepatosplenomegaly. Darkening of the skin, black fever or kala-azar can be seen and it can be fatal if not treated promptly. On the other hand, Leishmania tropica Complex caused Old World cutaneous leishmaniasis, Baghdad boil, and Delhi boil. It is common in Middle East and Northern Africa. Symptoms include skin lesion and ulcer but is self-limiting.

170. A patient came to visit an ophthalmologist and complained about eye pain and cloudiness of vision. The ophthalmologist requested direct examination of a corneal scraping he collected, what is the suspected specimen?
A. Enterovirus spp
B. Paragonimus spp
C. Naegleria spp
D. Acanthamoeba spp.

Morphologically, Acanthamoeba spp. appear as a wrinkled, double-walled cyst and are known to cause corneal keratitis.

171. If a patient was treated with antibiotics for multiple parasitism, which of the following parasites will be expelled from the body first?
A. Necator americanus
B. Ancylostoma duodenale
C. Ascaris lumbricoides
D. Trichuris trichura

Unlike hookworms and Trichuris trichura, Ascaris lumbricoides worms do not attach to the intestines. It just stays there inside and if it increases in number can cause obstruction rather than bleeding.

172. These parasites have the ability to cause severe iron deficiency anemia (IDA).
A. Necator americanus & Trichuris trichuira
B. Strongyloides stercoralis &Toxocara cani
C. Ascaris lumbricoides & Trichuris trichuira
D. Wuchereria bancrofti & Brugia malayi

Necator americanus & Trichuris trichuira cause severe IDA due to their ability to penetrate the mucosa for attachment.
Source: Belizario & de Leon (2013). Medical parasitology in the Philippines.

173. An MLS intern found an E. coli cyst on a wet mount of fresh stool specimen. What is the next step she should take?
A. Request another specimen because it was contaminated
B. Examine the remaining area of the wet preparation
C. Report the finding immediately
D. Look of additional E. coli cysts

Identifying multiple parasites in fecal specimens is common, so a full examination of each slide is necessary.

174. All of the following trematodes have the following characteristics: operculated ova, metacercaria as the infective stage, and are hermaphroditic, EXCEPT?
A. Paragonimus westermani
B. Clonorchis sinensis
C. Schistosoma haematobium
D. Heterophytes heterophytes

Trematodes except Schistosoma

- operculated
- metacercaria as infective stage
- hermaphroditic
- ingestion of metacercaria

Schistosoma spp

- unoperculated
- cercaria as infective stage
- has male and female
- skin penetration

175. Which of the following Plasmodium species is INCORRECTLY matched with its stippling?
I. Plasmodium falciparum: Maurer's dot
II. Plasmodium ovale: Zimmerman's dot
III. Plasmodium vivax: Schnuffner's dot
IV. Plasmodium malariae: James dot

A. I & IV
B. II & III
C. I & III
D. II & IV

- Plasmodium falciparum: Maurer's dot
- Plasmodium ovale: James dot
- Plasmodium vivax: Schnuffner's dot
- Plasmodium malariae: Zimmerman's dot

176. All of these can be detected in sputum, EXCEPT:
A. Larvae of Strongyloides stercoralis
B. Cysts of Echinococcus granulosus
C. Ova of Paragonimus westermani
D. Trophozoite of Iodamoeba butschlii

Sputum parasites

- Cysts of C. parvum & E. granulosus
- Ova of P. westermani & E. vermicularis
- Larvae of Hookworms, A. lumbricoides, S. stercoralis
- Trophozoite of E. histolytica, E. gingivalis, & T. tenax

177. Which of the following is NOT TRUE about T. saginata?
A. Presence of vaginal sphincter
B. Has two ovary lobules
C. Has 15-20 uterine branch points
D. Armed rostellum

178. What do Strongyloides stercoralis and Enterobius vermicularis have in common?
A. Infects the hosts through skin penetration
B. Can be transmitted through person to person contact
C. Capable of reinfection
D. Diagnosed with scotch tape method

Strongyloides stercoralis infects hosts through skin penetration while Enterobius vermicularis infects its host through ingestion or inhalation of embryonated ovum. Only Enterobius vermicularis capable of person to person transmission. Enterobius vermicularis can be diagnosed through scotch tape method while Strongyloides stercoralis is detected through examination of stool.

179. Infective stage of Leishmania species
A. Promastigote
B. Amastigote
C. Trypomastigote
D. Metacyclic trypomastigote

Promastigote is the infective stage.

180. Infection by Trypanosoma cruzi happens because:
A. Infected saliva of the mosquito
B. Infected feces of mosquito
C. Infected blood of the mosquito
D. Infected urine of the mosquito

An infected triatomine insect vector (or "kissing" bug) takes a blood meal and releases trypomastigotes in its feces near the site of the bite wound

181. Best way to identify microfilaria in low parasitemia
A. Thick and thin smear
B. Knott's concentration
C. Skin snips
D. Baermann Concentration

In cases of low microfilariae, 1 ml of blood can be mixed with 10 ml of 2% microfilariae and then centrifuged. The supernate is discarded and the sediment is studied. Part of the sediment can be spread like thin blood film and stained.

182. Upon direct examination, the medical technologist noted an amoeba about 5-12 um in diameter, quadrinucleated, had a large, irregular karyosome and grape-like chromatoidal bars.
A. E. nana
B. I. butschlii
C. E. gingivalis
D. D. fragilis

Entamoeba nana is described as an amoeba of quadrinucleated, 5-12 um had in diameter, a large, irregular karyosome and grape-like chromatoidal bars

183. This type of free-living parasite passes through the digestive tract without infecting the host.
A. Accidental
B. Spurious
C. Erratic
D. Facultative

184. Which parasite corresponds to its description?
A. Necator americanus: infection through ingestion of L3 larvae
B. Trichuris trichura: anterior ⅗ of the adult worm contain the intestine and a single set of reproductive organs
C. Strongyloides stercoralis: infective form is rhabditiform larvae
D. Capillaries philippinensis: adult worms contain stichosome, which is an entire esophageal structure composed of stichocytes

- Necator americanus: infection through SKIN PENETRATION of L3 larvae
- Trichuris trichura: attenuated anterior ⅗ of the adult worm is transversed by a narrow esophagus resembling a string of bead while robust posterior ⅖ contain the intestine and a single set of reproductive organs.
- Strongyloides stercoralis: diagnostic stage is rhabditiform larvae while infective stage is filariform larvae

185. Cestodes are described by the following statements, EXCEPT:
A. Order Pseudophyllidea has a uterine pore that allows release of eggs from the gravid uterus
B. Order Cyclophyllidea require two intermediate host
C. Order Pseudophyllidea has a spatulate scolex with suckling grooves called the bothria
D. Order Cyclophyllidea parasites' eggs and proglottids can both be used for diagnosis

186. The following statements about Paragonimus westermani is incorrect, EXCEPT:
A. Paragonimus westermani can be diagnosed through saliva
B. Its intermediate host includes a snail and a crab
C. Paragonimiasis can manifest as borborygmi and persistent pain in the lower right abdomen
D. Recommended treatment for this parasite include Albendazole

- Paragonimus westermani is diagnosed through sputum
- Its intermediate host includes a snail (Antemelonia asperata) and a crab (Sundathelphusa philippina)
- Paragonimiasis can be mistaken as tuberculosis due to similar symptoms like hemoptysis and chest pain
- Recommended treatment for this parasite include Praziquantel

187. This arthropod is capable of injuring its host by envenomization.
A. Ticks
B. Kissing bugs
C. Maggots
D. Millipedes

Envenomization
- Bees, wasps, kissing bugs, ants, caterpillar, centipede, spider, scorpion

Ectoparasitism
- Mosquito, fleas, lice, mites, ticks

Contact allergens
- Urticating caterpillar hair, blister beetle, millipede

Food and water pests
- Moth, beetle, mites, chironomids, maggots

188. The patient's initial diagnosis is bile duct obstruction, the medical technologist can expect which characteristic will appear in the submitted stool sample?
A. Ribbon-like
B. Blood-streaked mucus
C. Bulky/frothy
D. Coal-black appearance

189. The chief medical technologist gave you 10 stool samples to examine in the morning. Which of the following findings would NOT be considered as abnormal?
A. Presence of >6g of fat
B. Sour or rancid odor
C. Occult blood of 2.0 ml
D. Excessive quantity of mucus

Occult blood is detected through the principle of pseudoperoxidase activity of hemoglobin and myoglobin. Bleeding excess of 2.5 ml/150g of stool is pathologically significant even with not visible signs of bleeding.

190. Vector for African Sleeping Sickness
A. Reduviid Bugs
B. Tsetse fly
C. Ticks
D. Sandfly

Trypanosomes are blood and CSF flagellates that require an insect vector, the tsetse fly (genus Glossina) for transmission. Trypanosoma brucei rhodesiense and Trypanosoma brucei gambiense are the causative agents of sleeping sickness, which is seen primarily in central Africa.

191. An organism that can live and grow in reduced concentrations of oxygen but prefers an anaerobic environment is known as a/an
A. Capnophile
B. Obligate anaerobe
C. Facultative anaerobe
D. Aerotolerant anaerobe

Facultative anaerobe: Multiplies equaf/y we// in the presence or absence of 02
Aerotolerant anaerobe: Reduced concentrations of 02 (anaerobic system and a microaerophific environment)
Obligate anaerobe: Strict anaerobic environment (0% 02)
Capnophife: 5%-10% CO2

192. A gram-positive bacillus was isolated from a wound specimen and had the following characteristics: double zone of beta-hemolysis, lecithinase positive, lipase negative, indole negative. What is the most likely identification of this organism?'"

A. Clostridium Perfringens
B. Clostridium tetani
C. Clostridium botulinum
D. Clostridium difficile

Double zone of hemolysis on sheep blood agar plate incubated anaerobicaf/y, suggestive of C. perfringens.

193. Campylobacter jejuni is most noted for causing:

A. Wounds
B. Septicemia
C. Gastric ulcer
D. Gastroenteritis

Campylobacter jejuni is the most common bacterial cause of gastroenteritis in the world.

194. What is the proper name of naming organisms?

A. Genus starts with a capital letter
B. Species starts with a capital letter
C. Both start with a capital letter
D. Capitalize all letters

Each organism has a scientific "label" consisting of two parts: the genus designation, in which the first letter is always capitalized, and the species designation, in which the first letter is always lower case.

195. A gram-negative, oxidase-negative coccobacillus was isolated from a patient's CSF. The organism produced dark pink colonies on MacConkey agar and had the following biochemical results: TSIA: NAg H2S (-), indole positive, motile, urease negative and citrate negative. The most probable identity of this organism is:

A. Escherichia coli
B. Enterobacter aerogenes
C. Klebsiella pneumoniae
D. Serratia marcescens

196. It is a lemon-shaped cyst with a characteristic anterior nipple

A. Giardia lamblia
B. Entamoeba histolytica
C. Chilomastix mesnili
D. Dientamoeba fragilis

C. mesnili cyst: Lemon-shaped, uninuc/ear,Anterior of cyst has nipple-like protrusion

197. Identify the bacteria given the following results: Oxidase (+), O /129 Vibriostatic Agent: Susceptible, 6.5% NaCl: No growth, Glucose and Inositol Fermentation(+)

A. Vibrios
B. Plesiomonas
C. Aeromonas
D. Escherichia coli

Plesiomonas: Oxidase (+), 01129 Vibriostatic Agent: Susceptible, 6.5% NaCl: No growth, Glucose and Inositol Fermentation(+)

198. The only oxidase positive member of Enterobacteriaceae:
A. Proteus
B. Plesiomonas
C. Shigella
D. Edwardsiella

All members of the family Enterobacteriaceae are oxidase negative except for Plesiomonas shigelloides

199. Antigenic drift is the phenomenon of slight antigenic change seen in viruses over time as a result of minor mutations. Antigenic shift is the phenomenon by which an often unexpected change in virus strains that may trigger pandemics.
A. Only the first statement is correct
B. Only the second statement is correct
C. Both statements are correct
D. Both statements are incorrect

Antigenic drift is the phenomenon of slight antigenic change seen in viruses over time as a result of minor mutations. Antigenic shift is the phenomenon by which an often unexpected change in virus strains that may trigger pandemics.

200. A sign is different from a symptom in all of the following ways except:
A. It provides measurable data
B. It is believed to be associated with the etiology of the disease
C. It is clearly visible
D. It includes temperature, respiratory rate, and pulse

Signs are measurable indications or physical observations, such as an increase in body temperature (fever) or the development of a rash or swefling. Symptoms are indicators as described by the patient, such as headache, aches, fatigue, and nausea.

201. What step in the Gram stain distinguishes between gram-positive and gram-negative organisms?
A. Fixing of the cells to the slide using heat
B. Decolorization using acetone alcohol
C. Counterstaining using Safranin
D. Application of Gram's Iodine

Bacteria with thick ce/1 waifs containing teichoic acid retain the crystal violet-iodine complex dye after decolorization and appear deep blue; they are gram-positive bacteria. Other bacteria with thinner waifs containing fipopolysaccharides do not retain the dye complex; they are gram-negative bacteria.

202. Which type of enrichment media is used to isolate Group B Streptococcus?
A. Hektoen Enteric (HE) Agar
B. Todd Hewitt Broth
C. Regan Lowe Agar
D. Chocolate Agar

Todd-Hewitt, an enrichment broth for streptococci.

203. The complete clearing of media around bacterial colonies on a blood agar plate is referred to as:
A. Alpha Hemolysis
B. Beta Hemolysis
C. Gamma Hemolysis
D. Delta Hemolysis

Alpha: Partial lysis of red blood cef/s around colony, greenish discoloration of area around colony
Beta: Complete lysis of red blood cef/s around colony, clear area around colony
Gamma: Nonhemolylic, no lysis of red blood cef/s around colony, no change in agar

204. When an erythromycin resistant and clindamycin susceptible Staphylococcal isolate is encountered, a D-zone test for inducible clindamycin resistance must be performed before clindamycin is reported to be susceptible. Following overnight incubation, flattening of the clindamycin zone between the two disks occurred. This is reported as:

A. Erythromycin sensitive, clindamycin sensitive
B. Erythromycin resistant, clindamycin sensitive
C. Erythromycin resistant, clindamycin resistant
D. Erythromycin sensitive, clindamycin resistant

When an erythromycin resistant and c/indamycin susceptible staphylococcal isolate is encountered, a D-zone test for inducible clindamycin resistance must be performed before clindamycin is reported to be susceptible. For the D-zone test, an erythromycin disk is placed adjacent to a clindamycin disk (15 to 26 mm edge to edge) as part of a standard disk diffusion test. Fa/lowing overnight incubation, flattening of the c/indamycin zone between the two disks indicates the isolate has inducible clindamycin resistance. No flatten-ing indicates the isolate is erythromycin resistant only. When an isolate demonstrates inducible resistance, clindamycin is reported as resistant.

205. The virulence factor associated with Bacillus cereus is:

A. Edema Toxin
B. Lethal toxin
C. Protective antigen
D. Enterotoxin

B. cereus produces two toxins, one of which is preformed, called the emetic toxin, because it produces vomiting. The second type, probably involving several enterotoxins, causes diarrhea.

206. Nocardia species that cause nocardiosis often are:

A. Gram-variable
B. Spore-forming rods
C. Obligate anaerobes
D. Partially acid-fast

The genera Nocardia, Rhodococcus, Gordonia, and Tsukamurella are partially acid-fast aerobic actinomycetes.

207. Which non-fermenter resembles odor of roses similar to phenylethyl alcohol?'

A. Oligella
B. Alkaligenes
C. Psychrobacter
D. Acinetobacter

Cultures of Psychrobacter (saccharolytic strains) smell like roses.

208. Enterobacteriaceae are typically gram-negative and:

A. Non-glucose fermenters
B. Capable of reducing nitrates to nitrites
C. Catalase negative
D. Oxidase positive

In general, the Enterobacteriaceae consist of a diverse group of gram-negative bacilli or coccobacil/i; they are non spore forming, facultative anaerobes capable of fermenting glucose; they are oxidase negative (except for P/esiomonas sp.), they reduce nitrates to nitrites. Furthermore, except for Shigella dysenteriae type 1, all commonly isolated Enterobacteriaceae are catalase positive.

209. Which of the following is the only catalase-negative, gram-positive, non-spore-forming rod that produces H2S on TSI?

A. Gardnerella spp.
B. Erysipelothrix spp.
C. Lactobacillus spp.
D. Arcanobacterium spp

Erysipe/othrix sp. is the only cata/ase-negative, gram-positive non-spore-forming rod that produces hydrogen sulfide (H2S) when inoculated into triple sugar iron (TS/) agar.

210. Which Escherichia coli produces a heat-labile enterotoxin and a heat-stable enterotoxin?
A. EHEC
B. ETEC
C. EIEC
D. EAEC

ETEC Major Virulence Factors: Adhesins, LT and ST toxins

211. Which organism has large, smooth, glistening colonies with a lavender pigment and smells like ammonia?
A. Acinetobacter spp.
B. Bordetella spp.
C. Stenotrophomonas spp.
D. Burkholderia spp.

Stenotrophomonas maltophilia: Lavender to lavender-green (blood agar), odor of ammonia

212. In the test for urease production, ammonia reacts with the components of the medium to form which product?
A. Ammonium citrate
B. Ammonium carbonate
C. Ammonium oxalate
D. Ammonium nitrate

Urea is hydrolyzed to form carbon dioxide, water, and ammonia. Ammonia reacts with components of the medium to form ammonium carbonate, raising the pH, which changes the pH indicator, phenol red, to pink.

213. Which factor contributes to the pathogenicity of Pseudomonas aeruginosa?
A. Endotoxin A
B. Pyoverdin
C. Alginate
D. Cytotoxin

Virulence Factors: Exotoxin A, endotoxins, proteolytic enzymes, alginate, and pili

214. Bile salts and crystal violet are incorporated into MacConkey agar in order to:
A. Colony will appear as red and white for easy identification
B. Inhibit the swarming of Proteus
C. Inhibit the growth of gram-positive organisms
D. Inhibit the growth of Vibrio and fungus

Bile salts and crystal violet inhibit most gram-positive organisms but permit growth of gram-negative rods.

215. The characteristic colony morphology of Actinomyces israelii on solid agar resembles:
A. Medusa Head
B. Molar Tooth
C. Fried Egg
D. Ground Glass

Actinomyces spp. appears gram-positive, branching, beaded or banded, thin, filamentous rods and may resemble molar tooth

216. A suspected isolate of Vibrio spp. is isolated from a young child with diarrhea. The organism is identified as a curved, gram-negative rod, oxidase, lactose, and sucrose positive, that produces yellow colonies on TCBS. This organism is most likely:
A. Vibrio mimicus
B. Vibrio cholerae
C. Vibrio vulnificus
D. Vibrio parahaemolyticus

V. cholerae produces yellow colonies on TCBS. Other choices produces green colonies, sucrose (-)

217. The most common disease associated with Staphylococcus epidermidis:
A. Urinary tract infection
B. Prosthetic valve endocarditis
C. Health care-acquired UTI
D. Bacteremia

Staphylococcus epidermidis is a normal skin biota but is a contaminant in improperly collected blood culture specimens. The production of a BIOFILM serves as its primary virulence factor.

218. The most common disease associated with Staphylococcus saprophyticus:
A. Urinary tract infection
B. Prosthetic valve endocarditis
C. Health care-acquired UTI
D. Bacteremia

Most cases occur within 24 hours of sex, earning this infection the nickname "_HONEYMOON CYSTITIS."

219. Test that best differentiates Staphylococcus epidermidis from Staphylococcus saprophyticus:
A. Bacitracin sensitivity
B. Novobiocin sensitivity
C. Production of coagulase
D. Polymyxin B sensitivity

Staphylococcus saprophyticus: is the only Staphylococcus resistant to novobiocin.

220. Lethal to polymorphonuclear leukocytes:
A. Epidermolytic toxin
B. TSST-1
C. Enterotoxin
D. Panton-Valentine leucocidin

It has been implicated as a contributing factor to the invasiveness of the organism by suppressing PHAGOCYTOSIS and has been associated with severe cutaneous infections and necrotizing pneumonia.

221. Associated with women using highly absorbent tampons:
A. Epidermolytic toxin
B. TSST-1
C. Enterotoxin
D. Panton-Valentine leucocidin (PVL)

TOXIC SYNDROME SHOCK is a rare but potentially fatal, multisystem disease characterized by a sudden onset of fever, chills, vomiting, diarrhea, muscle aches, and rash, which can quickly progress to hypotension and shock.

222. Characterized by cutaneous erythema followed by profuse peeling of the epidermal layer of the skin:
A. Epidermolytic toxin
B. TSST-1
C. Enterotoxin
D. Panton-Valentine leucocidin (PVL)

Associated with SCALDED SKIN SYNDROME or RITTER DISEASE which is a bullous exfoliative dermatitis that occurs primarily in newborns and previously healthy young children. Toxin is present at a lesion distant from the site of exfoliation.

223. Exotoxin that activates clotting around S. aureus, thereby preventing phagocytosis:
A. Staphylokinase
B. Coagulase
C. Hyaluronidase
D. β-Lactamase

SIGNIFICANT ENZYMES OF STAPHYLOCOCCUS AUREUS

BOUND COAGULASE: Bound to the bacterial cell wall and reacts directly with fibrinogen
FREE COAGULASE: Extracellular protein enzyme that causes the formation of a clot
Fibrinolysin: Lyses thrombi, prevents body from "walling-off" an infection
Hyaluronidase: Permits bacteria to spread through CONNECTIVE TISSUE
LIPASE: Degrades lipids on skin making it susceptible to entry into epidermal layers
β-Lactamase: Cleaves the ring structure of PCN and its derivatives rendering them ineffective

224. Known as the "hot-cold" lysin: A.
α-hemolysin
B. β-hemolysin
C. δ-hemolysin
D. γ-hemolysin

225. Which S. aureus toxin(s) act as a superantigen?
I. Hemolysin
II. TSST-1
III. Exfoliative toxin
IV. Enterotoxin

A. I and III
B. II and IV
C. I, II, III
D. IV only

Superantigens activate a subpopulation of T cells with the Vβ-receptor subtype leading to a massive CYTOKINE RESPONSE.

226. How are Streptococcus species widely classified?
A. Based on their hemolytic pattern seen in blood agar.
B. Based on the carbohydrate composition of their bacterial cell wall.
C. Based on the protein antigens present on the bacterial cell surface.
D. Based on their Gram-stain reaction and morphology.

LANCEFIELD CLASSIFICATION
Based on carbohydrate composition in the bacterial cell wall.
SMITH BROWN CLASSIFICATION
Based on the hemolytic pattern on sheep blood agar.
GRAFFITH'S CLASSIFICATION
Based on the protein antigens present on the cell surface.

227. The following biochemical test results are true for Enterococcus, EXCEPT:
A. 6.5% NaCl positive
B. PYR positive
C. LAP positive
D. All of the above are correct

228. What virulence factor causes β-hemolysis?
A. Streptolysin O and S
B. Streptococcal pyrogenic exotoxin
C. Streptokinase
D. Hyaluronidase

229. What complication only arises from Streptococcus pharyngitis?
A. Rheumatic fever
B. Glomerulonephritis
C. Necrotizing fasciitis (NF)
D. Scarlet fever

230. The best-defined virulence factor of Group A streptococci:
A. F protein
B. M protein
C. Lipoteichoic acid
D. Capsule

M protein is the best-defined virulence factor encoded by the gene **emm**. Class 1M protein is associated with rheumatic fever, and class I or II is typically associated with glomerulonephritis.

231. Disease associated with streptococcal pyrogenic exotoxin:
A. Impetigo
B. Necrotizing fasciitis
C. Scarlet fever
D. Acute glomerulonephritis

Erythrogenic toxin-mediated disease that develops in association with infections of certain strains of S. pyogenes and is characterized by a course, erythematous, blanching rash; a strawberry tongue; petechial lesions in skin creases (Pastia sign); and desquamation of the skin.

232. The following diseases are associated with group B streptococci, EXCEPT:
A. Food poisoning in children
B. Septicemia in newborns
C. Endometritis in mothers
D. Endocarditis in immunocompromised

GBS infections usually are associated with neonates and are acquired before or during the birthing process and is known to cause septicemia, pneumonia, and meningitis in newborns. Infections in adults involve postpartum infections such as ENDOMETRITIS, which can lead to pelvic abscesses and septic shock.

233. Seen on Gram stain appear as gram-positive cocci in pairs with a characteristic lancet shape:
A. Streptococcus pyogenes (GAS)
B. Streptococcus agalactiae (GBS)
C. Streptococcus pneumoniae
D. Viridans streptococci

Most frequently isolated respiratory pathogen in community-acquired pneumonia (CAP). It is the primary cause of bacterial lobar pneumonia, meningitis, and the most frequently observed infection is OTITIS MEDIA.

234. What is the primary virulence factor of Streptococcus pneumoniae?
A. Pneumolysin
B. IgA protease
C. Polysaccharide capsule
D. Hyaluronidase

The polysaccharide capsule functions to inhibit phagocytosis and is antigenic. It can be identified with the NEUFELD test: in the presence of specific anti-capsular serum, the capsule swells (QUELLING reaction).

235. Virulence factor associated with the characteristic “rust-colored” sputum:
A. Pneumolysin
B. IgA protease
C. Polysaccharide capsule
D. Hyaluronidase

IgA protease allows for infection of the respiratory tract, leading to sinusitis and lobar pneumonia.

236. Most commonly encountered enterococci:
A. Enterococcus faecalis
B. Enterococcus faecium
C. Enterococcus casseliflavus
D. Enterococcus gallinarum

237. Enterococci where vancomycin resistance is more frequent:
A. Enterococcus faecalis
B. Enterococcus faecium
C. Enterococcus casseliflavus
D. Enterococcus gallinarum

238. What type of cancer is associated with non-Enterococcus group D Streptococcus?
A. Breast cancer
B. Lung cancer
C. Colon cancer
D. Prostate cancer

239. What growth requirements are needed for nutritionally variant streptococci (NVS)?
A. Vitamin B6
B. Vitamin B12
C. Vitamin A
D. Vitamin D

abiotrophia and Granulicatella spp. were formerly known as the nutritionally variant streptococci (NVS). These bacteria grow as satellite colonies around other bacteria and it is recommended to use an SBA plate with a S. aureus streak

240. The following laboratory results are true regarding Bacillus anthracis, EXCEPT:
A. Production of gelatinase
B. Penicillin resistant
C. Non-hemolytic colonies
D. Non-motile

241. Anthrax form that accounts for most human infections:
A. Cutaneous anthrax
B. Gastrointestinal anthrax
C. Inhalation anthrax
D. Injectional anthrax

Cutaneous anthrax
- Associated with contact with infected animal products.
- A small dark area appears in the center of the ring, forming a depressed black necrotic central area known as an BLACK ESCHAR

Gastrointestinal anthrax
- Results from ingestion of endospores.

Inhalation anthrax
- Acquired when spores are inhaled into the pulmonary parenchyma.
- WOOLSORTER'S DISEASE OR RAG PICKER DISEASE result from exposure to endospores during the handling of animal hides, hair, fibers, and other animal products.

Injectional anthrax
- Characterized by soft tissue infection associated with "skin popping" or other forms of injection drug use, frequently HEROIN, and results from the direct injection of the spores into tissue.

242. The most common food implicated with Bacillus cereus food poisoning:
A. Ready-to-eat (RTE) products
B. Dairy products
C. Raw chicken
D. Rice dishes

Also known as the FRIED RICE BACILLUS . Culture of suspected food from a food poisoning incident may be done to isolate and quantify B. cereus. If more than 105 B. cereus cells per gram of food are present and other pathogens are absent, food poisoning by this organism is confirmed.

243. The following characteristics are true regarding Listeria monocytogenes, EXCEPT:
A. Exhibits tumbling motility
B. β-hemolytic colonies
C. Catalase positive
D. H2S positive

244. The following characteristics are true regarding Erysipelothrix rhusiopathiae, EXCEPT:
A. VP positive
B. Esculin negative
C. H2S positive
D. Non-motile

245. What is the major virulence factor of Listeria monocytogenes?
A. Listeriolysin O
B. Capsule
C. Protein p60
D. Act A

It penetrates host cell's phagocytic vacuole to facilitate bacterial entry into the cytoplasm.

246. Listeria infections may be seen with the following, EXCEPT:
A. Pregnant women
B. Newborn
C. Immunocompromised hosts
D. All of the above are correct

L. monocytogenes is responsible for spontaneous abortion and stillborn neonates in pregnant women GRANULOMATOSIS INFANTISEPTICA refers to a granulomatous, or inflammatory, nodular rash of the skin caused by a Listeria infection in a newborn child. The most common manifestations are CNS infection and endocarditis in immunocompromised hosts.

247. What is the mode of transmission for contracting erysipeloid caused by E. rhusiopathiae?
A. Traumatized human skin comes into contact with an infected animal or animal meat.
B. Ingestion of infected animal or animal meat products.
C. Inhalation of infected animal hides or animal products.
D. None of the above

248. Most frequently recovered Corynebacterium species from human clinical material:
A. Corynebacterium amycolatum
B. Corynebacterium diphtheriae
C. Corynebacterium jeikeium
D. Corynebacterium ulcerans

249. Most common cause of Corynebacterium-associated prosthetic valve endocarditis in adults:
A. Corynebacterium amycolatum
B. Corynebacterium diphtheriae
C. Corynebacterium jeikeium
D. Corynebacterium ulcerans

250. Klebs-Löffler bacillus:
A. Corynebacterium amycolatum
B. Corynebacterium diphtheriae
C. Corynebacterium jeikeium
D. Corynebacterium ulcerans

Loeffler's medium stimulates growth and production of metachromatic granules (BABES ERNST).

251. Reverse CAMP reaction:
A. Corynebacterium amycolatum
B. Corynebacterium diphtheriae
C. Corynebacterium jeikeium
D. Corynebacterium ulcerans

252. Agent of bacterial vaginosis:
A. Actinomyces israelii
B. Arcanobacterium haemolyticum
C. Lactobacillus spp.
D. Gardnerella vaginalis

Clinical features of bacterial vaginosis (BV) include a gray-white, homogenous, malodorous vaginal discharge, with little or no discomfort and no inflammation. A wet mount prepared in saline reveals the characteristic "CLUE CELLS," which are large, squamous epithelial cells with numerous attached small rods.

253. Döderlein's bacillus:
A. Actinomyces israelii
B. Arcanobacterium haemolyticum
C. Lactobacillus spp.
D. Gardnerella vaginalis

Also known as the BOAS OPPLER BACILLUS when first discovered in the gastric juice of individuals with stomach carcinoma.

254. Most Neisseria species are:
A. Oxidase-positive, gram-positive diplococci
B. Oxidase-positive, gram-negative diplococci
C. Oxidase-negative, gram-negative diplococci
D. Oxidase-negative, gram-positive diplococci

255. AHU strains of Neisseria are isolated specifically from:
A. Neisseria meningitidis
B. Neisseria gonorrhoeae
C. Neisseria sicca
D. Neisseria flavescens

256. What is the step before hybridization in FISH?
a. Combination of target and probe
b. Labeling of the probe
c. Denaturation of probe and target sequences
d. Visualization of target sequences

257. Which of the following describes the correct way to select organisms for QC?
a. They should represent the most fastidious organisms for which the medium was designed.
b. They should be organisms that will grow most easily.
c. They should be immediately removed from the freezer.
d. Streaking should be done only once after their removal from the freezer.

258. Susceptibility tests must be quality controlled daily EXCEPT when?
a. An automated system is in use
b. Controls have been in an acceptable range for 6 months
c. Precision is demonstrated for 20 or 30 consecutive days
d. A new antimicrobial agent is added

259. The laboratory must perform QC on all of the following media, EXCEPT:
a. Complex media
b. Media made by the laboratory
c. Media with a history of failure
d. All media obtained from a commercial source

260. What should be done when interpreting the zone size of a motile, swarming organism?
a. The swarming should be ignored
b. The results of the disk diffusion method are invalid
c. The swarming area should be measured as the growth boundary
d. The isolate should be retested after diluting to a 0.5 McFarland standard

261. Storage temp for viral specimens
a.-20C
b. 4C
c. 20C
d.-70C

262. If processing is delayed, fungal specimens is stored at:
a. 37 C
b. Ref
c. RT
d.-20C

263. The presence of residual chlorine in drinking water means:
a. Safe for consumption
b. Sufficient amount of chlorine was added initially to the water
c. Water is contaminated with coliform
d. Overchlorination

264. McFarland standard is equivalent to:
a. 0.5 x 10^8 CFU/ml
b. 1.5 x 10^8 CFU/ml
c. 0.5 x 10^9 CFU/ml
d. 1.5 x 10^9 CFU/ml

265. The lowest concentration of antimicrobial agent that visibly inhibit the growth of the organism being tested known as the:
a. Minimum inhibitory concentration (MIC)
b. Minimum bactericidal concentration (MBC)
c. Agar disk diffusion test
d. Dilution test

266. Babes-Ernst granules are the metachromatic granules produced by:
a. M. tuberculosis
b. Y. pestis c.
C. diphtheriae
d. E. aerogenes

267. What is the purpose of mordant in gram staining?
a. Primary stain
b. Secondary stain
c. Dye fixative
d. Differentiation

268. What do gram-positive bacteria stain?
a. Purple
b. Green
c. Red
d. Maroon

269. Acid-fast bacteria appear what color microscopically?
a. Red
b. Blue
c. Green
d. Purple

270. Culture media for Pseudomonas
a. Cetrimide agar
b. MacConkey agar
c. Cefsulodin-Irgasan-Novobiocin agar
d. Cystine Tellurite Blood agar

271. Culture media for Vibrio
a. Blood agar
b. Thiosulfate citrate bile salt sucrose (TCBS)
c. Cefsulodin-Irgasan-Novobiocin agar
d. Cystine Tellurite Blood agar

272. Which provides the NAD for the isolation of Haemophilus spp.?
a. Sheep blood agar
b. Brain heart infusion agar
c. Chocolate agar
d. Nutrient agar

273. Mannitol salt agar is selective and differential for
a. Staphylococcus
b. Enterococcus
c. Gram positive cocci
d. Streptococcus

274. Which type of organism is isolated if growth in MAC is pink?
a. Non-lactose fermenter
b. Microaerophile
c. Lactose fermenter
d. Obligate aerobe

275. What test is employed in the differentiation of Enterobacteriaceae?
a. IMViC
b. Indole
c. Glucose fermentation
d. Capsule

276. Positive result for indole test:
a. Red
b. Blue
c. Green
d. Orange

277. Positive result for citrate test:
a. Red
b. Blue
c. Green
d. Orange

278. What is the characteristic odor of Proteus?
a. Grape-like odor
b. Bleach like odor
c. Fruity odor resembling apples or strawberries
d. Burnt chocolate odor

279. What is the characteristic odor of Alcaligenes faecalis?
a. Grape-like odor
b. Bleach like odor
c. Fruity odor resembling apples or strawberries
d. Burnt chocolate odor

280. Choose the group of bacteria that is described as catalase-positive, gram positive cocci that grow facultatively anaerobic and that form grapelike clusters.
a. Neisseria spp.
b. Rothia
c. Staphylococcus
d. Micrococcus

281. Most sensitive method for detecting MRSA:
a. Serology
b. NAAT
c. Culture
d. Microscopy

282. Neisseria are:
a. Gram-positive diplococci
b. Gram-negative diplococci
c. Gram-negative coccobacilli
d. Gram-negative bacilli

283. What is the best specimen for the isolation of Bordetella pertussis?
a. Throat swabs
b. Sputum
c. Nasopharyngeal swab
d. Anterior nose swab

284. Infectious form of chlamydia
a. Elementary bodies
b. Reticulate bodies
c. Inclusion bodies
d. Negri bodies

285. What is the etiologic agent of Q fever?
a. Chlamydia trachomatis
b. Mycoplasma hominis
c. Mycoplasma pneumoniae
d. Coxiella burnetii

286. Human infection with the causative agent of Q fever is acquired by
a. Inhalation of infectious material
b. Bite of a mite (chigger)
c. Bite of a body louse
d. Bite of the arthropod Phlebotomous

287. What is the specimen of choice for Bacillus cereus food poisoning?
a. Food
b. Stool
c. Blood
d. Rectal swab

288. To read the hemolytic rection on a blood afar plate, hold the plate up to the light and hold the plate with the light coming from _____.
a. Above
b. Behind
c. Front
d. Below

289. Greenish discoloration in medium surrounding colony due to partial lysis of RBCs
a. Alpha hemolysis
b. Beta hemolysis
c. Gamma hemolysis
d. Alpha prime

290. Small ring of no hemolysis around the colony, which is surrounded by a wider zone of complete hemolysis
a. Alpha hemolysis
b. Beta hemolysis
c. Gamma hemolysis
d. Alpha prime

291. The mechanism that is mediated by viruses:
a. Transformation
b. Transduction
c. Conjugation
d. Plasmidization

292. Slide coagulase test is a rapid screening test for
a. Clumping factor
b. Free coagulase
c. Extracellular coagulase
d. Catalase

293. All of the following are the pigments produced by Pseudomonas, EXCEPT:
a. Pyoverdin
b. Pyocyanin
c. Pyorubin
d. Prodigiosin

294. A "rice watery stool" is characteristic of patients infected with
a. Clostridium botulinum
b. Salmonella typhi
c. Shigella dysenteriae
d. Vibrio cholerae

295. The protein coat that surrounds the nucleic acid of a virion is ____.
a. Capsomere
b. Capsid
c. Capsule
d. Nucleocapsid

296. Which of the following is the specimen of choice for detecting rotavirus?
a. Throat swab
b. Urine sample
c. Bronchoalveolar wash
d. Feces sample

297. What is the infective stage of plasmodium to Anopheles mosquito?
a. Gametocyte
b. Sporozoite
c. Trophozoite
d. Egg

298. How is parasitism expressed when the malaria parasite is quantified against RBC?
a. Parasite/ul
b. Ratio
c. Average
d. Percent

299. How is parasitism expressed when the malaria parasite is quantified against WBC?
a. Parasite/ul
b. Ratio
c. Average
d. Percent

300. What is the stain of choice for malaria?
a. Wright
b. Giemsa
c. Trichome
d. Hematoxylin

301. In Giemsa staining, the thick film is immersed in tap water. What is the purpose of the tap water?
a. Fixative
b. Dehemoglobinization
c. Mordant
d. Accelerator

302. What is used to fix the thin film for malaria?
a. Formalin
b. Ethanol
c. Methanol
d. Glutaraldehyde

303. The advantage of thick blood smears for malarial parasites is to:
a. Improve staining of the organisms
b. Improve detection of the organisms
c. Remove RBC artifacts
d. Remove platelets

304. Acquired through ingestion/inhalation:
a. Ascaris
b. Whipworm
c. E. vermicularis
d. Strongyloides

305. The following are correct match EXCEPT:
a. Strongyloides stercoralis: Rhabditiform larva
b. Ascaris lumbricoides : Embryonated egg
c. Ancylostoma duodenale : Filariform larva
d. Trichuris trichuria : Embryonated egg

306. Best time to collect E. vermicularis ova.
a. Morning
b. Afternoon
c. Night
d. Midday

307. The best method to demonstrate the ova of Enterobius vermicularis is
a. FECT
b. Cellophane tape preparation
c. AECT
d. Zinc sulfate floatation

308. Broad fish tapeworm
a. Diphyllobothrium latum
b. Taenia solium
c. Taenia saginata
d. Hymenelopis nana

309. This is a very pruritic, popular rash due to the penetration of the cercaria into the unbroken skin:
a. Swimmer's itch
b. Skin ulcer
c. Skin lesion
d. Ground itch

310. This egg has pointed terminal spine.
a. Schistosoma japonicum
b. Schistosoma mansoni
c. Schistosoma haematobium
d. Schistosoma mekongi

311. What is the infective stage of Schistosomes to man?
a. Cercaria
b. Miracidium
c. Egg
d. Sporocyst

312. Trophozoite is found in what type of specimen?
a. Formed
b. Loose
c. Soft
d. Watery

313. Immunoassays can be used in detecting which parasite?
a. Ascaris
b. Malaria
c. Enterobius
d. Trichuris

314. What is the gold standard for the detection of T. gondii?
a. Circumoval precipitin test (COMT)
b. ELISA
c. Sabin-Feldman test
d. Montenegro tes

315. This parasite is the etiologic agent of hydatid disease.
a. Taenia solium
b. Taenia saginata
c. Echinococcus granulosus
d. Schistosoma japonicum

316. Identification of gram-negative diplococci in urethral discharge within which cell type is sufficient for the diagnosis of gonorrhea in men?
A. Neutrophil
B. Basophil
C. Eosinophil
D. Monocyte

Women may be asymptomatic leading to complications, such as pelvic inflammatory disease, which may cause sterility, ectopic pregnancy, or perihepatitis (FITS HUGH CURTIS SYNDROME).

317. Waterhouse-Friderichsen syndrome is an important clinical disease caused by:
A. Neisseria meningitidis
B. Neisseria gonorrhoeae
C. Moraxella catarrhalis
D. Neisseria lactamica

Waterhouse-Friderichsen syndrome is a form of fulminant meningococcemia leading to septic shock and bilateral adrenal hemorrhage causing a catastrophic adrenal insufficiency and death in hours.

318. Colonies are usually dry, wrinkled, adherent, and breadcrumb-like:
A. Neisseria weaveri
B. Neisseria elongata
C. Neisseria sicca
D. Moraxella catarrhalis

319. The following are H2S positive, EXCEPT:
A. Klebsiella oxytoca
B. Proteus vulgaris
C. Salmonella typhi
D. Edwardsiella tarda

320. The following are nonmotile at 35°C, EXCEPT:
A. Klebsiella pneumoniae
B. Yersinia pestis
C. Shigella flexneri
D. Salmonella typhi

321. Antigen/s used to serologically group Salmonella and Shigella:
A. O antigen
B. H antigen
C. K antigen
D. Both A and B

322. The K1 antigen is an important virulence factor of:
A. Salmonella typhi
B. Shigella flexneri
C. Escherichia coli
D. Proteus vulgaris

The K1 antigen is an important virulence determinant of Escherichia coli strains and has been shown to be associated particularly with _NEONATAL MENINGGITIS , bacteremia and septicemia.

323. Non-lactose fermenters, EXCEPT:
A. Shigella dysenteriae
B. Shigella flexneri
C. Shigella boydii
D. Shigella sonnei

SHIGELLA SONNEI can ferment lactose due to weak lactose permease activity after prolonged incubation.

324. Agent of chronic atrophic rhinitis:
A. Klebsiella oxytoca
B. Klebsiella ozaenae
C. Klebsiella pneumoniae
D. Klebsiella rhinoscleromatis

Chronic atrophic rhinitis which is also known as empty nose syndrome or ozena is a chronic disease manifested with atrophy of the nasal mucosa and foul-smelling discharge.

325. Friedlander's bacillus:
A. Klebsiella oxytoca
B. Klebsiella ozaenae
C. Klebsiella pneumoniae
D. Klebsiella rhinoscleromatis

326. What biochemical test best differentiates Klebsiella pneumoniae from Klebsiella oxytoca?
A. Indole production
B. Citrate utilization C
. Malonate utilization
D. Growth at 44°C

327. Triple enzyme positive enteric:
A. Shigella flexneri
B. Proteus vulgaris
C. Yersinia enterocolitica
D. Serratia marcescens

328. What biochemical test best differentiates Proteus mirabilis from Proteus vulgaris?
A. Urease activity
B. Indole production
C. Lactose fermentation
D. Methyl red reaction

329. Only Pseudomonas spp. capable of producing pyoverdin AND pyocyanin?
A. Pseudomonas aeruginosa
B. Pseudomonas fluorescens
C. Pseudomonas putida
D. Pseudomonas stutzeri

330. The following are groups of patients extremely susceptible to P. aeruginosa infections, EXCEPT:
A. Burn patients
B. Cystic fibrosis patients
C. Neutropenic patients
D. Pediatric patients

331. Whitemore's bacillus:
A. Burkholderia cepacia
B. Burkholderia mallei
C. Burkholderia pseudomallei
D. None of the above

332. The AACEK group are clinically significant causes of:
A. Pericarditis
B. Rheumatic heart disease
C. Endocarditis
D. Bacterial sepsis

AACEK is an acronym for a group of small, fastidious gram-negative bacilli that cause endocarditis. The AACEK organisms include Aggregatibacter aphrophilus, Aggregatibacter actinomycetemcomitans, Cardiobacterium hominis, Eikenella corrodens, and Kingella kingae

333. Distinctive "star shape with four to six points" in the center of the colonies seen at 48 hours:
A. A. actinomycetemcomitans
B. Cardiobacterium hominis
C. Eikenella corrodens
D. Kingella kingae

334. "Pitting" bacteria:
A. Eikenella corrodens
B. Kingella kingae
C. Kingella denitrificans
D. All of the above

Several bacteria have the metabolic capability to LIQUEFY OR DEGRADE the agar surface, creating a corroded aspect or producing small craters in the agar (pitting) where colonies may sink into. This phenomenon is best observed after prolonged incubation of 48-72 hours.

334. Motility for Capnocytophaga spp.:
A. Darting motility
B. Gliding motility
C. Corkscrew motility
D. Swarming motility

335. Koch-Week's bacillus:
A. Haemophilus influenzae
B. Haemophilus aegypticus
C. Haemophilus ducreyi
D. Haemophilus parahaemolyticus

336. Pfeiffer's bacillus:
A. Haemophilus influenzae
B. Haemophilus aegypticu
C. Haemophilus ducreyi
D. Haemophilus parahaemolyticus

A337. gent of chancroid:
A. Haemophilus influenzae
B. Haemophilus aegypticus
C. Haemophilus ducreyi
D. Haemophilus parahaemolyticus

It is a highly communicable sexually transmitted genital ulcer disease (GUD). Chancroid is commonly referred to as soft chancre, in contrast to the hard chancre of syphilis

338. Special culture requirements for Haemophilus organisms:
A. X and V factors
B. Cysteine
C. Charcoal
D. Thymidine

Haemophilus organisms require preformed growth factors present in blood namely X FACTOR (hemin or hematin); V FACTOR (nicotinamide adenine dinucleotide [NAD]); or both.

"339. Comma-shaped," Gram-negative rod with a single polar flagellum:
A. Vibrio spp.
B. Aeromonas spp.
C. Pleisomonas spp.
D. All of the above

340. Direct inoculation of contaminated brackish water:
A. Vibrio parahaemolyticus
B. Vibrio vulnificus
C. Vibrio cholerae
D. Vibrio alginolyticus

Transmitted via direct inoculation of contaminated brackish water which causes necrotizing wound infections or via ingestion of raw shellfish causes gastroenteritis and sepsis with necrotizing skin lesions.

341. String test positive, EXCEPT:
A. Vibrio parahaemolyticus
B. Vibrio vulnificus
C. Vibrio cholerae
D. Vibrio alginolyticus

The string test may be performed on a glass microscope slide or plastic petri dish by suspending 18 to 24-hour colony from a non-inhibitory medium in a drop of 0.5% aqueous solution of SODIUM DEOXYCHOLATE . A mucoid "string" is formed when an inoculating loop is drawn slowly away from the suspension.

342. **Vibrio spp. that requires 0% NaCl:**
A. Vibrio parahaemolyticus
B. Vibrio vulnificus
C. Vibrio cholerae
D. Vibrio alginolyticus

343. **Demonstrates the Kanagawa phenomenon:**
A. Vibrio parahaemolyticus
B. Vibrio vulnificus
C. Vibrio cholerae
D. Vibrio alginolyticus

344. **Guillain-Barré syndrome (GBS) is associated with the following, EXCEPT:**
A. Mycoplasma pneumoniae
B. Chlamydia pneumoniae
C. Campylobacter jejuni
D. Helicobacter pylori

345. **Most common cause of bacterial diarrhea (gastroenteritis) in the United States:**
A. Campylobacter jejuni
B. Helicobacter pylori
C. Campylobacter coli
D. Campylobacter fetus

After incubation of approximately 3 days, patients usually present with abdominal pain and diarrhea. However, approximately one-third of patients present with an influenza-like prodrome (i.e., fever, malaise), followed a day later by severe loose, watery, or bloody stools.

346. **Causative agent of duodenal ulcers:**
A. Campylobacter jejuni
B. Helicobacter pylori
C. Campylobacter coli
D. Campylobacter fetus

Ninety percent of duodenal ulcers are associated with Helicobacter pylori. Chronic nonsteroidal anti inflammatory drug (NSAID) use accounts for the remaining 10%. UREASE is an important pathogenic factor, that produces ammonia and bicarbonate that neutralizes gastric acids.

347. **What is the typical cause of Pasteurella multocida in human infections?**
A. Cat scratches
B. Tick bites
C. Ingestion of contaminated meat
D. Respiratory aerosols

Pasteurella multocida is the most common cause of infection following a bite or scratch from domestic pets. Exposure can lead to rapidly progressing soft tissue, respiratory, or other serious invasive infections.

348. **What special culture requirement does Francisella tularensis have?**
A. X and V factors
B. Cysteine
C. Charcoal
D. Blood

349. **Bang's bacillus:**
A. Brucella abortus
B. Brucella suis
C. Brucella canis
D. Brucella melitensis

350. The following biochemical results are correct for Brucella abortus, EXCEPT:
A. Urease positive
B. H2S positive
C. Inhibited by thionin
D. Inhibited by basic fuchsin

351. When cleansing the skin with alcohol and then iodine for the collection of a blood culture, the iodine (or iodophor) should remain intact on the skin for at least:
A. 10 seconds
B. 30 seconds
C. 60 seconds
D. 5 minutes

Alcohol and iodine preparations (e.g., Betadine) must be in contact with an object for at least 1 to 2 minutes for them to kill microorganisms.

352. In the United States, most blood agar plates are prepared with 5% or 10% red blood cells (RBCs) obtained from:
A. Sheep
B. Horses
C. Humans
D. Dogs

Sheep RBCs are used in blood agar plates because they are readily available and less inhibitory than cells of other species. The type of hemolysis is determined by the source of RBCs. Sheep RBCs are chosen because of the characteristically clear hemolysis produced by β hemolytic streptococci, Staphylococcus, and other pathogens producing β-hemolysins. Sheep blood does not support the growth of Haemophilus haemolyticus, eliminating the possibility of confusing it with β-hemolytic streptococci in throat cultures

353. **Which of the following tests will rapidly differentiate micrococci from staphylococci?** A. Catalase
B. Coagulase
C. Modified oxidase
D. Novobiocin susceptibility

The modified oxidase test (Microdase) is used to rapidly identify catalase-positive gram positive cocci as Micrococcus spp. (positive) or Staphylococcus spp. (negative). Filter paper disks that are saturated with oxidase reagent (tetramethyl-pphenylenediamine in dimethylsulfoxide) are used. A colony of the isolate is rubbed onto the paper. Oxidase-positive organisms produce a purple color within 30 seconds or a blue color within 2 minutes if using the commercial product Microdase

354. A pregnant patient presented with symptoms similar to hepatitis A but tested negative. She had traveled to India most recently. Which of the following is the cause of a hepatitis infection with a high mortality rate (10%–20%) in pregnant women and is transmitted via the fecal–oral route?
A. Hepatitis B
B. Hepatitis E
C. Hepatitis C
D. Hepatitis D

HEV infection results in an acute and generally self-limiting viral hepatitis (inflammation of the liver). Most infected patients do not progress to a long-term carrier status. This virus is well established in developing countries as a cause of hepatitis clinically similar to infection with the hepatitis A virus (HAV). It differs from HAV in that the virus can cause an exceptionally high fatality rate among pregnant women. Fulminant hepatitis develops rapidly and is fatal in approximately 30% of women when infected during the third trimester of pregnancy. The reason for this high rate of mortality among pregnant women is not known. Women should take all possible precautions to avoid exposure to HEV while pregnant, including refraining from traveling to areas of the country where HEV is endemic, such as India and Pakistan.

356. Which virus is associated with venereal and respiratory tract warts and produces lesions of skin and mucous membranes?
A. Polyomavirus
B. Poxvirus
C. Adenovirus
D. Papillomavirus

Human papillomaviruses (HPVs) cause genital warts, the most prevalent sexually transmitted viral disease in the United States. Several strains, including HPV-6, HPV11, HPV-16, and HPV-18, are associated with penile, cervical, and vaginal neoplasia, causing more than 60% of the cancers. Because the virus cannot be cultured in vitro, diagnosis is usually made by using DNA probes, histopathology, or cytological examination of cutaneous biopsy of cells. A diagnostic characteristic of infected cells is koilocytosis, a perinuclear clearing in the squamous epithelium accompanied by nuclear atypia. Currently, the FDA has licensed three vaccines for HPV: Cervarix, Gardasil, and Gardasil 9.

357. Hepatitis B virus can be commonly transmitted by:
A. Acupuncture
B. Tattoos
C. Sexual contact
D. Fecal-Oral

Although the most common mode of transmission of hepatitis B is via needle puncture, it may also be transmitted by other parenteral means, including through sexual transmission and contact with contaminated blood via broken skin or mucous membranes

358. What Treponema spp. causes yaws?
A. Treponema pallidum subsp. pertenue
B. Treponema pallidum subsp. endemicum
C. Treponema carateum
D. Treponema vincentii

359. Vector and causative agent of Lyme disease:
A. Body louse, Borrelia recurrentis
B. Ornithodoros spp., Borrelia parkeri
C. Body louse, Borrelia burgdorferi
D. Ixodes tick, Borrelia burgdorferi

360. What may be seen in the first stage of Lyme disease?
A. Erythema chronicum migrans
B. Neurologic disorders
C. Arthritis
D. Acrodermatitis chronica atrophicans

361. Most common manifestation of the third stage of Lyme disease?
A. Erythema chronicum migrans
B. Neurologic disorders
C. Arthritis
D. Acrodermatitis chronica atrophicans

362. Disease associated with Leptospira interrogans serovar autumnalis:
A. Fort Bragg fever
B. Marsch fever
C. Infectious jaundice
D. Seven-day fever

363. Chlamydia trachomatis serovars associated with lymphogranuloma venereum: A. Serovars D-K
B. Serovars L1, L2, L3
C. Serovars A, B, C
D. All of the above

364. The following are general characteristics of fungi, EXCEPT:
A. Heterotrophic microorganisms
B. Possess a true nucleus with a nuclear membrane
C. Cell wall is composed of chitin
D. Grow best at an acidic pH

365. The following are general characteristics of yeasts, EXCEPT:
A. Form a smooth, creamy, bacterial-like colony
B. Form a fuzzy or woolly appearance
C. Reproduce by budding or fission
D. Single vegetative cells

366. What reagent is added to a skin scraping sample to identify dermatophytes?
A. Lactophenol cotton blue
B. India ink stain
C. Calcofluor white
D. Potassium hydroxide

367. The following are true regarding sexual reproduction, EXCEPT:
A. Also called perfect reproduction
B. Results in the formation of conidia following mitosis
C. Requires joining of two compatible nuclei followed by meiosis
D. All of the above are correct

368. Hyaline and dematiaceous hyphae are differentiated by the amount of what substance present?
A. Melanin
B. Chitin
C. Glucan
D. Sugar

369. The incorrect match between the organism and one method of acquiring the infection is:
A. Trypanosoma brucei rhodesiense—bite of sand fleas
B. Giardia lamblia—ingestion of water contaminated with cysts
C. Hookworm—skin penetration of larvae from soil
D. Toxoplasma gondii—ingestion of raw or rare meats

East and West African trypanosomiasis (T. b. rhodesiense and T. b. gambiense) are caused when infective forms are introduced into the human body through the bite of the tsetse fly, not sand fleas

370. The adult tapeworm of Echinococcus granulosus is found in the intestine of:
A. Dogs
B. Sheep
C. Humans
D. Cattle

Although the hydatid cysts are found in sheep or in humans (accidental intermediate host), the adult tapeworms of E. granulosus are found in the intestine of the dog.

371. What technique is best used for the recovery of coccidian oocyst (Cryptoporidium, Cyclospora and Isospora)?
a. Sheather's sugar flotation
b. Zinc sulfate flotation
c. Brine flotation
d. Acid ether concentration technique

Sheather's sugar floatation → Reagent: Boiled sugar preserved with phenol is the reagent
Brine floatation→ Reagent: saturated table salt solution
Zinc sulfate floatation → For protozoan cysts and nematode eggs except Trichuris and Capillaria. Not able to recover operculated eggs, infertile ascaris eggs and schistosomes

372. The disease most commonly associated with Acanthamoeba sp. is
A. Diarrhea
B. Keratitis
C. Liver abscess
D. Meningoencephalitis

Acanthamoeba is a free-living ameba rarely causing human infections. This organism has been associated with granulomatous infections of the skin and lung, as well as meningoencephalitis. However, the most common presentation is keratitis, infection of the cornea. Most keratitis cases have been associated with contact lenses.

373. Many parasites have different stages of growth within different hosts. The host where the sexual reproductive stage of the parasites exists is called the
A. Commensal
B. Definitive host
C. Intermediate host
D. Vector

In parasites with a sexual and asexual stage of development, the definitive host is the host in which the sexual stage of the parasite occurs. The intermediate host is the host in which the asexual stage of the parasite is found. Vectors are arthropods, like mosquitoes and ticks that transmit infectious agents. A commensal is an organism that benefits from an existence with a host but does not damage the host.

374. Acceptable stool sample size
a. 2 to 5 grams
b. 5 to 8 grams
c. 10 grams
d. 4 to 8 grams

375. The zoonotic disease known as creeping eruption is caused by:
a. Ascaris lumbricoides
b. Ancylostoma braziliense
c. Dirofilaria spp.
d. Toxocara canis

Creeping eruption is caused by ANIMAL HOOKWORMS -
- Ancylostoma caninum
- Ancylostoma brazilien

376. The characteristic that most clearly differentiates cysts of Iodamoeba bütschlii from other amebic cysts is (are):
a. Chromatoid bars with rounded ends
b. Eight nuclei with eccentrically located karyosomes
c. Ingested bacteria and red blood cells
d. A large glycogen vacuole
e. Lemon-shaped cysts

378. Acanthamoeba keratitis is usually associated with:
a. Contaminated lens-cleaning solutions
b. Hard contact lenses
c. Soft contact lenses
d. Wearing lenses while swimming
e. Swimming without lenses

379. Which of the following is the most important feature in differentiating cysts of Entamoeba histolytica from E. dispar?
A. Number of nuclei
B. Size of the cyst
C. Shape of the karyosome
D. Distinguishing surface antigens by immunologic assays

E. histolytica and E. dispar cannot be morphologically differentiated. The cyst stage of both organisms has four nuclei with a centrally located karyosome. E. histolytica is a wellrecognized intestinal parasite, whereas E. dispar is considered nonpathogenic. Immunologic assays to detect antigens or molecular biology assays are necessary to differentiate these two species

380. **There are few procedures considered STAT in parasitology. The most obvious situation would be:**
A. Ova and parasite examination for giardiasis
B. Baermann's concentration for strongyloidiasis
C. Blood films for malaria
D. Culture of amoebic keratitis

The request for blood films for malaria should always be considered a stat request. Any laboratory providing these services should be available 24 hours a day, 7 days a week. In cases of P. falciparum malaria, any delay in diagnosing the infection could be fatal for the patient.

381. **Plasmodium vivax and Plasmodium ovale are similar because they:**
A. Exhibit Schüffner's dots and have a true relapse in the life cycle
B. Have no malarial pigment and multiple rings
C. Commonly have appliqué forms in the red cells
D. Have true stippling, do not have a relapse stage, and infect old red cells

Both P. vivax and P. ovale infect young red cells, have true stippling (Schüffner's dots), contain malarial pigment, and have a true relapse stage in the life cycle.

382. **Early ring stages of the fifth human malaria, Plasmodium knowlesi, resemble those of:**
A. Plasmodium malariae
B. Plasmodium ovale
C. Plasmodium falciparum
D. Plasmodium vivax

The early ring stages of Plasmodium knowlesi resemble those of P. falciparum.

383. **Sanitary disposal of human feces is the most important factor in decreasing the incidence of most infections caused by intestinal parasites. Which of the following diseases would not be affected by that kind of sanitation?**
A. Ascariasis
B. Taeniasis
C. Trichinosis
D. Hookworm infection

Excretion in human feces of the eggs of the hookworms, Taenia solium, T. saginata, and Ascaris lumbricoid.es, is an essential or important factor in perpetuating the cycle of infection with these parasites. Trichinosis is caused by ingestion of the live larvae of Trichinella spiralis encysted in the muscles of a flesh-eating host. The adults live in the host's intestine, and the viviparous females, after fertilization, produce larvae that migrate into the host's muscle tissue

384. **Stool may be presented with formalin solution. This concentration is recommended for protozoan cysts.**
a. 10%
b. 5%
c. 30%
d. 40% stock

Formalin

- All purpose fixative
- 5%: recommended for protozoan cysts
- 10%: recommended for helminth eggs and larvae
- Solution may be buffered with sodium phosphate to preserve morphological characteristics of the organisms

385. What is the smallest human virus?
A. Poliovirus
B. Rotavirus
C. Hepatitis virus
D. Human papilloma virus

386. Identify the correct sequence of events for viral replication:
A. Attachment, uncoating, assembly, penetration, release, replication
B. Assembly, uncoating, attachment, penetration, replication, release
C. Attachment, penetration, uncoating, replication, assembly, release
D. Assembly, penetration, replication, uncoating, attachment, release

387. Proteinaceous infectious particles that cause a group of diseases in mammals called transmissible spongiform encephalopathies:
A. Prions
B. Virions
C. Cytolytic virus
D. Cytopathic virus

388. The following are DNA-containing viruses:
A. Poxvirus, Picornavirus, Reovirus, Retrovirus, Arbovirus
B. Togavirus, Arenavirus, Coronavirus, Retrovirus, Orthomyxovirus
C. Parvovirus, Hepadnavirus, Papovirus, Adenovirus, Herpesvirus
D. Paramyxovirus, Rhabdoviruses, Papovirus, Adenovirus, Herpesvirus

389. What group of viruses possess hemagglutinin (HA) and neuraminidase (NA)?
A. Picornaviruses
B. Adenoviruses
C. Orthomyxoviruses
D. Caliciviruses

390. Which strain of influenza is involved with pandemics?
A. Influenza A
B. Influenza B
C. Influenza C
D. All strains of Influenza

391. What viral inclusion bodies is associated with yellow fever?
A. Negri bodies
B. Councilman bodies
C. Cowdry type A bodies
D. Cowdry type Bbodies

392. Other than retroviruses, which other family of viruses utilizes reverse transcriptase?
A. Hepadnaviruses
B. Herpes viruses
C. Reoviruses
D. Rhabdoviruses

393. Why has it been difficult to produce effective vaccines against HIV?
A. Production of a vaccine is too expensive.
B. HIV virus mutates rapidly for a vaccine to be effective.
C. The infected cell's protein coat is similar to normal cells.
D. There is not enough research to support production.

394. HIV stage where CD4 count is < 200 cells/μL:
A. Stage I/A
B. Stage II/B
C. Stage III/C
D. Stage IV

395. Known as “slapped-cheek disease”:
A. First disease
B. Third disease
C. Fourth disease
D. Fifth disease

396. COVID-19 variant with pango lineage B.1.617.2:
A. Alpha
B. Beta
C. Gamma
D. Delta

397. The appearance of Koplik spots in the oral mucosa of patients is characteristic of infection with:
A. Hepatitis
B. Measles
C. Rabies
D. Smallpox

398. Use solutions of lower specific gravity than the parasitic organisms:
a. Flotation techniques
b. Sedimentation techniques
c. Both of these
d. None of these

399. Direct examination of stool specimens stained with iodine make the trophozoite of the protozoa stain what color?
a. Yellow
b. Brown
c. Trophozoites are destroyed by iodine
d. Do not stain

400. The modified acid-fast stain is most often used in parasitology to identify:
a. Protozoan cysts and trophozoites
b. Helminth eggs
c. Plasmodium
d. Cryptosporidium and other coccidian

401. Specific gravity of zinc sulfate solution for the flotation method:
a. 1.01
b. 1.04
c. 1.18
d. 1.48

402. The ideal temperature at which to hold a fecal specimen for more than 1 hour is:
a. Freezer temperature
b. Refrigerator temperature
c. Room temperature
d. Incubator temperature

403. Eggs contain a six-hooked oncosphere with the absence of polar filaments in the space between the oncosphere and the eggshell:
a. Hymenolepis diminuta
b. Hymenolepis nana
c. Taenia saginata
d. Taenia solium

404. Cysticercosis is caused by the disseminated larva of:
a. Hymenolepis nana
b. Hymenolepis diminuta
c. Taenia saginata
d. Taenia solium

405. Which tapeworm cannot be identified to the species level based on its egg morphology; instead, proglottids must be examined?
a. Diphyllobothrium
b. Dipylidium
c. Hymenolepis
d. Taenia

406. Infective stage of T. cruzi is _____
a. Promastigote
b. Amastigote
c. Epimastigote
d. Trypomastigote

407. African sleeping sickness, which one has a faster rate of progression?
a. T. b. rhodensiense
b. T. b. gambiense
c. T.cruzi
d. All of the above

408. A gram negative bacilli that produces exotoxin A. it is associated with cystic fibrosis patients.
a. P.aeruginosa
b. B. cepacia
c. B. pseudomallei
d. B. mallei

409. A zoonotic infection primarily affecting horses and causes severe local supportive or acute pulmonary infections in humans.
a. B.pseudomallei
b. B. cepacia
c. B.mallei
d. P.aeruginosa

Burkholderia mallei causes glanders, a respiratory tract zoonosis primarily affecting livestock such as horses, mules and donkeys. It is rare in humans but can produce severe local suppurative or acute pulmonary infection.

410. When is the best time to collect specimen for malaria?
a. After the height of fever
b. At the height of fever
c. Anytime of the night
d. Anytime of the day

411. Which of the following organisms is/are the organism probable of the BCM test below?
a. Proteus spp
b. Salmonella spp
c. Shigella
d. Campylobacter

412. Standard inoculum used in agar dilution.
a. 1.0X10^4
b. 1.5 X10^8
c. 1.0X10^8
d. 1.5X10^4

413. Inoculum concentration of E.coli suspension for the preparation of McFarland Standard.
a. 1.5 X10^8 CFU/ml
b. 5.0 X10^5 CFU/ml
c. 1.0X10^6 CFU/ml
d. 1.0 X10 ^4 CFU/ml

415. Which of the following can be used as a sample for C.dificille toxin?
a. stool
b. Blood
c. Food
d. Urine

416. Hanging drop method is used to identify_____
a. Motility
b. Hemolysis
c. Biochemical reaction
d. Growth pattern

417. Which temperature range does a mesophile is able to live?
a. 30 to 40'C
b. 100-125'C
c. 0-4'C
d. 4-15'C

418. Which of the following parasites inhabit the large intestines?
a. Enterobius vermicularis
b. Ascaris lumbricoides
c. Ancylostoma duodenale
d. Strongyloides stercoralis

419. Which of the following organism is being described?
Phenylalanine deaminase:
GREEN H2S: BLACK
Indole: RED RING

a. Proteus mirabilis
b. Proteus vulgaris
c. Morganella morganii
d. Providensia spp

420. Which technique is most widely used for the confirmation of infection with human immunodeficiency virus (HIV)?
a. Western blot assay
b. ELISA
c. Complement fixation
d. Polymerase Chain Reaction

421. Which of the following is the causative agent of HEM?
a. E. histolytica
b. N.fowleri
c. A.cantonensis
d. N.meningitidis

423. How long is the cellophane tape used in pinworm identification?
A. 4 inch/10 cm
B. 5 inch
C. 6 inch
D. 7 inches

424. What is the ratio of stool to preservative?
a. 3:1
b. 1:1
c. 1:3
d. 2:1

425. Layers after centrifugation of FECT tube
a. Ether, fecal Debris, Formalin, Sediments
b. Fecal debris, ether, formalin, sediments
c. formalin, fecal debris, ether, sediments
d. Ether, Formalin, fecal Debris, Sediments

426. A sexually active 24-year-old woman complains of vaginal itching and a malodorous purulent vaginal discharge. To verify your tentative diagnosis of trichomoniasis, you should include which of the following in your workup?

a. Specific serologic test
b. Ova and parasite fecal smear
c. Wet mount of vaginal fluid
d. Stool culture

427. A 37-year-old sheep farmer from Australia presents with upper right quadrant pain and appears slightly jaundiced. A stool exam was negative for ova and parasites but a CT scan of the liver reveals a large 14-cm cyst that appears to contain fluid. Which of the following parasites should be considered?
a. Toxoplasma gondii
b. Taenia solium
c. Clonorchis sinensis
d. Echinococcus granulosus

428. Malonate test positive color is?
a. Yellow
b. Blue
c. Red
d. Green

429. The second intermediate host of P. westermani is _____
a. Crabs or cray fishes
b. Fresh water fish
c. Fresh water vegetation
d. Snail

430. Trophozoites of what protozoan parasite have the following characteristics:
I. small, delicate nuclear karyosomal chromatin
II. fine, even peripheral chromatin
III. progressive motility with hyaline, fingerlike pseudopods.
a. E. coli
b. E.histolytica
c. D.fragilis
d. T.vaginalis

431. The head of this roundworm contains four rows of cephalic hooklets. The body is covered with transverse rows of spines that diminish anteriorly to posteriorly.
a. Gnathostoma spinigerum
b. Ancylostoma duodenale
c. Parastrongylus cantonensis
d. Parastrongylus costaricensis

432. Identify the organism:
Gram negative bacilli
IMVC - - + +
LOA + + -

a. Klebsiella pneumoniae
b. Klebsiella oxytoca
c. Enterobacter aerogenes
d. Enterobacter cloaceae

433. Which of the following has been recommended as an effective disinfectant for drinking water?
a. Sodium hypochlorite
b. Chlorine
c. Iodine
d. Alcohol

434. Used to measure the zone of inhibition around the disk
a. Tape measure
b. Ruler
c. Meter stick
d. Caliper

435. Kirby-Bauer Disk Diffusion Agar Depth:
a. 3mm
b. 4mm
c. 2mm
d. 5mm

436. Inoculum too heavy Very dry surface of the agar Increased resistance of _P.aeruginosa to aminoglycosides and tetracycline to all bacteria. Size of antibiotic disc K/A, gas positive, H2S positive
a. E.coli
b. Shigella
c. Pseudomonas
d. Salmonella

437. Which of the following indicators is/are used in Mac-Conkey agar
a. Phenol red
b. Neutral red
c. Bromthymol blue
d. Eosin methylene blue

438. What type of infection mimics acute viral enteritis, bacillary bacterial poisoning and traveler's diarrhea where the dysentery, diarrheic stools lack blood, mucus, and cellular exudate?
a. Cryptosporidiosis
b. Giardiasis
c. Balantidiosis
d. Sarcocysticosis

439. Identify the trematode: Operculated, immature egg.
a. Echinostoma
b. Schistosoma
c. Clonorchis
d. Opistorchis

440. What specimen is obtained from a patient when performing Schlichter test?
a. Serum
b. Stool
c. Exudate
d. Throat swab

4441. Using toluidine blue method, what is the positive color in DNAse test?
a. Clearing
b. No clearing
c. Pink
d. Green

442. Which of the following is a confirmatory test for congenital HIV and congenital syphilis respectively?
a. Western blot, PCR
b. PCR, Western blot
c. Western blot, RIA
d. PCR, RIA

443. Which of the following shows antigenic variation?
a. American trypanosomiasis
b. B.recurrentis
c. Influenza virus
d. N.meningitidis
e. T pallidum
f. AOTA

444. Which of the following conditions is transmitted through the bite of an assassin bug?
a. West African sleeping sickness
b. Cutaneous leishmaniasis
c. Visceral leishmaniasis
d. American trypanosomiasis

445. All of the ff. organism contains the enzyme Beta-galactosidase, except?
a. Citrobacter
b. Proteus
c. coli
d. Hafnia

446. Which of the following shows bipolar staining (bipolar bodies) characteristics?
a. L.monocytogenes
b. C. granulomatis
c. B. melitensis
d. V. cholera

447. Which of the following culture media is used to induce capsule formation of B.anthracis?
a. Phenylethyl alcohol (PEA) agar
b. Polymixin Lysozyme EDTA thallous acetate (PLET)
c. Bicarbonate agar
d. Egg yolk agar

448. This gram-negative bacillus, which is oxidase positive and does not ferment carbohydrates, is frequently found in human bite infections. a. Escherichia coli
b. Neisseria meningitidis
c. Chromobacterium violaceum
d. Eikenella corrodens

449. A gamma- hemolytic streptococcus that blackens bile esculin agar but does not grow in 6.5% NaCl broth is most likely?
a. Group B
b. Enterococcus
c. Group D Streptococcus
d. Streptococcus pneumoniae

450. Which of the following cestode is a pseudophyllidean?
a. E.granulosus
b. T.sollum
c. H.nana
d. D.latum

451. A Gram stain from a gum lesion showed what appeared to be amoebae. A trichrome smear showed amoebae with a single nucleus and partially digested PMNs. The correct identification is:
a. Trichomonas tenax
b. Entamoeba histolytica/E. dispar
c. Entamoeba gingivalis
d. Entamoeba polecki

452. All of the following specimens should be kept in a sterile container EXCEPT:
a. Wound swab
b. CSF
c. Body fluids
d. Urine

453. Plating media for CSF collected from shunt:
a. BAP
b. CAP
c. BAP, CAP
d. BAP, CAP, Thio

454. Before the collection of sputum, you should instruct the patient to:
a. Rinse mouth and do not gargle
b. Rinse mouth or gargle with water
c. Rinse mouth or gargle with Listerine
d. Rinse mouth or gargle with Colgate 360

455. Which of the following has not been isolated in sputum?
a. HBV
b. Paragonimus
c. M. tuberculosis
d. S. pn
eumoniae

456. SPECIMEN FOR OVA AND PARASITE DETECTION SHOULD BE PLACED IN WHAT TYPE OF CONTAINER?
a. Glass container
b. Paper-board container
c. Waxed cardboard
d. Ice cream container

457. What is the number of bacteria needed to cause turbidity in broth culture and to be seen with an unaided eye?
a. 10^2 organisms/mL
b. 10^4 organisms/mL
c. 10^6 organisms/mL
d. 10^8 organisms/mL

458. When examining body fluids by direct microscopic examination, if one organism is seen per oil immersion field, how many organisms per milliliter of specimen are present?
a. 55
b. 75
c. 10^5
d. 10^8

459. CSF
a. Centrifuge
b. G/S
c. India ink
d. Acridine orange

460. Todd Hewitt broth containing colistin and nalidixic acid.
a. LIM broth
b. Thioglycolate broth
c. GN broth
d. All of the above

461. SDA is a _____ medium
a. Selective
b. Nutritive
c. Differential
d. Enrichment

462. THE D-zone susceptibility test is used to test inducible resistance On S .aureus strains demonstrating an initial antibiotic susceptibility profile of:
a. Erythromycin sensitive, clindamycin sensitive
b. Erythromycin resistant, clindamycin sensitive
c. Erythromycin resistant, clindamycin resistant
d. Erythromycin sensitive, clindamycin resistant

463. Host cells, such as red and white blood cells (phagocytes) appear what color after gram staining procedure?
a. Violet
b. Colorless
c. Pink
d. Brown

464. The transport medium for Vibrio cholerae can be
a. Venkatraman-Ramakrishnan medium
b. Selenite F broth
c. Tetrathionate broth
d. Nutrient broth

465. The bacteria that is negative for fermentation of mannitol is
a. S flexneri
b. S boydii
c. S dysenteriae
d. S sonnei

466. A psychrophilic halophile would be a microbe that prefers
a. cold temperatures and increased amounts of salt
b. warm temperatures and increased amounts of pressure
c. cold temperatures and the absence of oxygen
d. warm temperatures and increased amounts of acid

467. Nagler's reaction is useful for the identification of
a. C tetani
b. C perfringens
c. C botulinum
d. C difficile

468. Which of the following(s) is/are obligate anaeorbes?
a. C septicum
b. C novyi
c. C tetani
d. All of these

469. Stained smears are initially examined using a _____objective to look for large structures, such as nematode larvae, Curschmann's spirals, large granules, grains, bacterial microcolonies, or fungal forms.
a. low-power
b. high power
c. oil immersion
d. any of the above

470. Concentration of hydrogen peroxide used to disinfect inanimate surfaces?
a. 10%
b. 5%
c. 7%
d. 3%

471. During morning shift, different specimens where received by the MT at the same time, which of the following specimens should be processed first?
a. Catheter tip
b. Urine
c. Blood
d. Bone

472. It is typically the key to identification of Serratia marcescense.
a. DNAse
b. Prodigiosin
c. ONPG
d. Lipase

473. Which of the following is used as a skin test for Chlamydia?
a. Dick's test
b. Francis test
c. Foshay test
d. Frei test

474. Also known as Dwarf Intestinal Fluke.
a. Echinostoma ilocanum
b. Fasciola hepatica
c. Fasciolopsis buski
d. Heterophyes heterophyes

475. Which of the following organism can be acquired by eating dairy products and with contact with animal tissues and can be diagnosed by serology or culture?
a. Francisella tularensis
b. Brucella spp
c. Yersinia pestis
d. Pasteurella multocida

476. This bacterium requires carbon dioxide for growth. It cannot grow in the presence of thionine but can in the presence of basic fuchsin. It causes abortion in cattles.
a. Brucella abortus
b. Brucella mellitensis
c. Brucella suis
d. Brucella canis

477. Which substance interferes with stool sample testing?
a. Cooking oil
b. Mineral oil
c. Calcium
d. Hair dye

478. Infection of which of the following species is/are considered as medical emergencies?
a. Plasmodium vivax
b. Plasmodium knowlesi
c. Plasmodium falciparum
d. Plasmodium ovale
e. Two of the above

479. Transport media for V cholerae
a. Stuart
b. Amies
c. Cary-Blair
d. VTM

480. Common name of T trichiura
a. Pinworm
b. Threadworm
c. Gian intestinal fluke
d. Whipworm

481. What is the purpose of adding 0.025% to 0.050% SPS to nutrient broth media for the collection of blood cultures?
a. Inhibits phagocytosis and complement
b. Promotes formation of a blood clot
c. In enhances growth of anaerobes
d. It functions as a preservative.

482. A throat culture was taken from a 6-year old boy with a gray pseudomembrane covering his oropharynx. It is catalase positive, isolated in CT medium and is subculture on tyinsdale medium, it grew as black colonies with brown halo. When you perform gram stain what is its possible morphology?
a. Gram-positive branching bacilli
b. Gram positive bacilli in irregular clublike shape
c. Gram, positive cocci in chains
d. Gram positive cocci in grape like clusters

483. Necator americanus rhabditiform latvae can be differentiated from strongyloides stercoralis rhabditiform larvae by?
a. Length of the notched tail
b. Length of the head region
c. Segmentation
d. Size of the genital primordium

484. Not seen in PBS
a. Loa loa
b. S mansoni
c. Plamodium
d. Trypanosoma

485. Not classified as a sign, except
a. Swelling
b. Redness
c. Malaise
d. Fever

486. Which of the following concentration of alcohol is the most effective germicide?
a. 75%
b. 100%
c. 25%
d. 45%

487. Method of choice for recover of anaerobic bacteria in deep abscess
a. Cotton swab in abscess area
b. Scalpel's swab used for debridement
c. Skin snips in the surface
d. Needle aspirate for surface decontamination

488. The following identifies the most common cause of neonatal sepsis and meningitis.
a. CAMP test
b. Coagulase
c. PYR
d. 6.5% Nacl

489. Which of the following is observed in severe COVID-19 patients?
A. Increased Leukocytes
B. Increased ALT
C. Increased AST
D. All of the Above

In severe COVID-19 patients: Increased Neutrophils, ALT, AST, Cardiac Biomarkers, and Procalcitonin Lippi G. Plebiani M. Laboratory Abnormalities in Patient With COVID-19 Infection.

490. Psittacosis is a lower respiratory infection in humans caused by contact with what animal?
A. Swine
B. Cats
C. Birds
D. Rodents

Chlamydophila psittaci is the cause of psittacosis among psittacine birds, also known as ornithosis or parrot fever.

491. Tinea capitis is caused by which dermatophyte?
A. Trichophyton tonsurans
B. Microsporum audoinii
C. Microsporum canis
D. All of the above

All of the choices cause tinea capitis. Refer to TABLE 59-10: Common Filamentous Fungi Implicated in Human Mycotic Infections

492. Which fungus is most often acquired by traumatic implantation into the skin?
A. Histoplasma capsulatum
B. Sporothrix schenckii
C. Coccidioides immitis
D. Paracoccidioides brasiliensis

S. schenckii has a worldwide distribution, and its natural habitat is living or dead vegetation. Humans acquire the infection (sporotrichosis) through trauma (thorns, splinters), usually to the hand, arm, or leg. The infection is an occupational hazard for farmers, nursery workers, gardeners, florists, and miners; it is commonly known as "rose gardener's disease. "

493. Human cysticercosis occurs when:
A. Taenia solium eggs are ingested
B. Reverse peristalsis returns gravid segments into the intestine
C. Humans ingest contaminated pork
D. All of the above

Taenia solium, also known as the pork tapeworm, causes an intestinal infection from eating contaminated pork. Following ingestion of T. so/ium eggs, the oncospheres hatch in the intestine and invade the intestinal wall. Once the larvae invade the tissue the organism is capable of spreading systemically by migration to the brain, liver, and other tissues, causing human cysticercosis. Cysticercosis is defined as larval forms distributed throughout the body. Human cysticercosis may also occur when reverse peristalsis returns gravid segments into the intestine, where the eggs hatch and release oncospheres.

494. Which adult fluke has a prominent cephalic cone?
A. Fasciola hepatica
B. Opistorchis felineus
C. Fasciolopsis buski
D. Echinostoma ilocanum

F. hepatica adults are approximately 3 cm long and have a prominent cephalic cone.

495. All of the following are sexual spores except:
A. Basidiospores
B. Zygospores
C. Oospores
D. Sporangiospores

The asexual spores (sporangiospores) are produced in a structure known as a sporangium, which develops from a sporangiophore

496. The ethanol shock procedure is used to differentiate:
A.Actinomyces and Bifidobacterium spp.
B.Prevotella and Porphyromonas spp.
C.Clostridium and Bacteroides spp.
D.Bacteroides and Actinomyces spp

Clostridium species can be recovered from mixed populations of organisms and identified using the ethanol shock spore technique

497. It causes rat-bite fever with sodoku.
A. Rickettsia spp.
B. Leptospira spp.
C. Streptobacillus monoliformis
D. Spirillum minus

S. minus also causes rat-bite fever in humans and is referred to as sodoku.

498. All of the following have been used to describe colonies of Streptobacillus monoliformis except:
A. Flutt balls
B. Mercury drops
C. Bread crumbs
D. Fried egg

In broth cultures, the organism grows as "fluff balls" or "bread crumbs" near the bottom of the tube of broth or on the surface of the sedimented red blood cell layer in blood culture media. Colonies are embedded in the agar and may also have a "fried egg" appearance, with a dark center and a flattened,/acy edge.
Young colonies of B. pertussis and B. parapertussis are small and shiny, resembling mercury drops.

499. Bartonella bacilliformis has been known to cause:
A. Trench fever
B. Cat-scratch disease
C. Verruga and Oroya
D.Lyme disease

B. bacil/iformis, the agent of verruga peruana and a septicemic, hemolytic disease known as Oroya fever.

500. In the test for urease production, ammonia reacts with the components of the medium to form which product?
A. Ammonium citrate
B. Ammonium carbonate
C. Ammonium oxalate
D. Ammonium nitrate

Urea is hydrolyzed to form carbon dioxide, water, and ammonia. Ammonia reacts with components of the medium to form ammonium carbonate, raising the pH, which changes the pH indicator, phenol red, to pink.