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DEPARTMENT: PRECLINICAL SCIENCES

DISCIPLINE: MICROBIOLOGY

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The bibliography and the topic

Compulsory bibliography

Mimi Dobrea, Course support, PPT, 2014-2015. ,,The morphology and physiology of the bacteria,,. The complet material was sent to the students in electronic format.

Optional Bibliography

Carter G.R., M.M. Chengappa – Essentials Veterinary Bacteriology and Mycology Ed. Lea&Febiger, London 1999.

QUESTION AND ANSWER VARIANTS

The plasmids are made up of:

A. DNA extrachromosomal
B. mRNA
C. tRNA
D. rRNA
E. Only from intrachromosomal DNA

In nature bacteria are found:

A. Only in the form of spores
B. Only in the form of vegetative cells
C. Only in the form of vegetative cells, or alternatively in the form of vegetative cells and in the form of spores
D. Only in the form of resistance
E. No answer is true

The slowing of bacterial multiplication in a liquid medium in the stationary phase is determined by:

A. Depletion of nutrients from the culture medium
B. Achieving a maximum cell concentration/volume unit
C. Accumulation of metabolites in the culture medium
D. Drastic increase of the pH in the culture medium
E. All answers are wrong

The obligatory component of the envelope of a bacterial vegetative cell is:

A. The cell wall
B. The cytoplasmic membrane

C. Capsule
D. Glicocalix
E. The cell wall and cytoplasmic membrane

The mesosomes are structures that derive from:
A. Cytoplasmic membrane
B. Cell wall
C. Capsule
D. Glicocalix
E. Bacteria do not have mesosomes

Select the phase of multiplication of bacteria in liquid media in which it is recommended to perform bacteriological examinations:
A. Exponential or logarithmic phase
B. Lag phase
C. Decline phase
D. Stationary phase
E. Latency phase

Under the action of penicillin and lysozyme, Gram positive bacteria turn into:
A. Spheroplasts
B. Protoplasts
C. R form
D. S form
E. M form

In Gram negative bacteria the basal corpuscle of the flagellum consists of:
A. A single disc
B. Two discs
C. Three discs
D. Four discs
E. Gram negative bacteria do not possess the basal corpuscle

Which of the following processes indicates the end of the germination:
A. Hydration of the sporoplasm
B. Activation of enzymatic equipment
C. Resumption of the multiplication
D. Initiation of biosynthesis processes
E. None of these processes

Peritrichous bacteria show:
A. Some flagella at each end
B. Some flagella at one end
C. Several flagella arranged over the entire surface of the cell
D. One flagellum at each end
E. A single lateral flagellum

The sizes of bacteria are measured in:
A. Millimeters
B. Microns
C. Nanometers
D. Angstroms
E. All answers are wrong

The cytoplasmic membrane of bacterial cell does not content sterols, except:
A. Leptospira
B. Mycoplasma
C. Mycobacterium
D. Pathogenic streptococci
E. None variant is true

According to their location, the mesosomes can be:
A. Vesicular, lamellar tubular
B. Tubular, perinuclear, septal
C. Lateral, lamellar, septal
D. Septal, parietal, perinuclear
E. All answers are wrong

Select the structure of the spore which contains the DNA:
A. protoplast
B. Intine
C. Cortex
D. Exine
E. Sporangium

The bacteria which need oxygen in a smaller concentration than in air, are including in following respiratory type/subtype:
A. Aerobic type
B. Strict aerobic subtype
C. Anerobic type/strict anaerobic subtype
D. Anerobic type/microaerophilic subtype
E. Aerobic-anaerobic facultative type

Which bacterial species produces a microcapsule?
A. Clostridium perfringens
B. Pasteurella multocida
C. Klebsiella pneumoniae
D. Bacillus anthracis
E. Streptococcus pneumoniae

Clostridium tetani is including in the following respiratory type:
A. Aerobic type
B. Strict aerobic subtype
C. Anaerobic type/strict anaerobic subtype
D. Anaerobic type/microaerophilic subtype
E. Aerobic-anaerobic facultative type

The bacterial ribosomes have the sedimentation constant:
A. 20 S
B. 70 S
C. 50 S
D. 30 S
E. 40 S

Bacillus subtilis is including in the following respiratory type:
A. Anaerobic type

B. Strict aerobic subtype
C. Anerobic type/strict anaerobic subtype
D. Anerobic type/microaerophilic subtype
E. Aerobic-anaerobic facultative type

Select the bacterial forms without cell wall:
A. Vegetative forms
B. Spore forms
C. L forms
D. S forms
E. R forms

The pigment pyocyanin is synthesized by:
A. Pseudomonas aeruginosa
B. Staphylococcus aureus
C. Corynebacterium equi
D. Serratia marcescens
E. None of these species

The specific location of the Clostridium tetani spore is:
A. Subterminal
B. Central
C. Terminal
D. Lateral
E. None of these locations

The structural elements of a bacterial spore from inside to outside are the following:
A. Sporal protoplast, intine, cortex, exine
B. Intine, sporal protoplast, cortex, exine
C. Cortex, exine, sporal protoplast, intine,
D. Exine, sporal protoplast, intine, cortex,
E. Sporal protoplast, exine, cortex, intine

The main multiplication process of the bacteria is:
A. Conjugation
B. Branching
C. Elementary bodies
D. Binary fission
E. Budding

The active metabolic form of the bacteria is:
A. Vegetative cell
B. Spore
C. Vegetative cell and the spore
D. Sporangium
E. None answer is true

Bacterial cytoplasmic membrane contains:
A. Phospholipids (amphipathic)
B. Peptidoglycan
C. Lipide A
D. Teichoic acid
E. Lipoteichoic acid

The chemical composition of the bacterial pili is:
A. Phospholipids
B. Peptidoglycan
C. Polysaccharides
D. Nucleic acid
E. Protein

Select the wrong statement about the F pili:
A. They have an axial channel
B. They contain molecules of pilin
C. They are involved in conjugation
D. They form a bridge between donor and acceptor cells
E. They are involved in sporogenesis process

The almost bacteria contain:
A. A variable number of chromosomes
B. Only one chromosome
C. The chromosome is not a compulsory structure of bacteria
D. The bacteria do not have chromosomes
E. All answers are wrong

The type of movement of mobile bacteria is determined by the sense of rotation of disc:
A. S
B. M
C. P
D. L
E. None of these discs

The biochemical structure of the cytoplasmic membrane contains:
A. One simple layer of phospholipids
B. A bilayer of proteins
C. A bilayer of carbohydrates
D. A bilayer of phospholipids
E. One simple layer of lipids

Which bacterial species synthesize a polypeptide capsule:
A. Bacillus anthracis
B. Klebsiella pneumoniae
C. Streptococcus pneumoniae
D. Pasteurella multocida
E. None of these species

The smallest bacteria are included in the genus:
A. Clostridium
B. Pasteurella
C. Staphylococcus
D. Bacillus
E. All answers are wrong

The periplasmic space is meet:
A. Only in mycoplasmas
B. Only in Gram positive bacteria

C. Only in Gram negative bacteria
D. All bacteria
E. Only in spore forming bacteria

The ribosomes from biochemical point of view contain:
A. Ribonucleoproteins
B. Phospholipids
C. Polysaccharides
D. Inorganic polymers
E. All answers are wrong

The largest bacteria from veterinary bacteriology are included in the genus:
A. Clostridium
B. Pasteurella
C. Brucella
D. Salmonella
E. Staphylococcus

The sarcina is a group of:
A. Two cocci
B. Three cocci
C. Four cocci
D. Eight cocci
E. All answers are wrong

The bacteria of which genus contain many lipids:
A. Stapylococcus
B. Listeria
C. Mycobacterium
D. Clostridium
E. Bacillus

Select the correct variant about the content in water of bacterial cell:
A. 75 – 85 %
B. 12 – 20 %
C. 5 – 30 %
D. 40 – 60 %
E. 50 – 60 %

Select a spirochete:
A. Staphylococcus
B. Pseudomonas
C. Salmonella
D. Streptococcus
E. Leptospira

Carotenoid pigments protect the bacterial cell against:
A. Electromagnetic waves
B. Antibiotics
C. Chemotherapeutics
D. Disinfectants
E. Light waves, especially UV

The generation time (the interval between two divisions) in almost bacteria is:

A. 2- 3 minutes
B. 20- 30 minutes
C. 24 hours
D. 60 minutes
E. 930-1080 minutes

How is the diameter of the spore in Clostridium genus compare to the transversal diameter of the vegetative cel :

A. Larger than it
B. Equals
C. Smaller
D. Depending on the species (sometimes larger sometimes smaller than it)
E. All answers are wrong

All bacterial spores are destroyed to:

A. 120°C wet heat and 180°C dry heat
B. 100°C wet heat and 112°C dry heat
C. 65°C wet heat and 80°C dry heat
D. 120°C wet heat and 180°C dry heat
E. 112°C wet heat and 120°C dry heat

Which bacterial species synthesize a mucous (diffuse) capsule:

A. Bacillus anthracis
B. Klebsiella pneumoniae
C. Streptococcus pneumoniae
D. Escherichia coli
E. Pasteurella multocida

Stopping of the bacterial multiplication in a liquid medium, during the decline phase is determined by:

A. Depletion of the nutrients from the culture medium
B. The medium becomes toxic
C. Accumulation of metabolites in the culture medium
D. Drastic decrease of the pH of the culture medium
E. All answers are correct

Basal corpuscle of the flagella of Gram positive bacteria is made up from:

A. Four discs
B. Three discs
C. Two discs
D. One disc
E. None answer is true

Which components are compulsory for the bacterial cell?

A. Wall cell, nuclear material, ribosomes, capsule
B. Cytoplasmic membrane, capsule, ribosomes
C. Cytoplasmic membrane, ribosomes, nuclear material
D. Capsule, flagella, ribosomes
E. Wall cell, capsule, cytoplasmic membrane

Which statement about the bacterial cell wall is wrong?

A. Maintains the shape of the cell
B. Mediates the transport of different substances between the medium and the cell

C. Osmotic barrier
D. The support for different receptors
E. Compulsory component of the bacteria

Select the true statement about the bacterial cytoplasm:
A. It is a facultative component
B. Has cytoplasmic currents
C. Has gel consistency
D. Contains mitochondria
E. Contains endoplasmic reticulum

Lophotrichous bacteria have:
A. One single polar flagellum
B. Many flagella on one end
C. Many flagella to each end
D. Many flagella on the all surface of the cell
E. All answers are wrong

The cellulose is in the chemical composition of the bacteria:
A. Only in the vegetative cells
B. Only in spores
C. In the vegetative cells and in spores
D. Bacteria do not contain cellulose
E. All statements are wrong

Select the wrong statement about the heterotroph nutritive type:
A. Organic carbon is the carbon source
B. Organic nitrogen is the nitrogen source
C. The energy sources are the biochemical reactions
D. The saccharides can be carbon source
E. CO_2 can be carbon source

The bacterial episomes are:
A. Groups of ribosomes
B. They appear during the intense synthesize process in the cell
C. They contain ribonucleoproteins
D. They are integrative plasmids
E. All answers are wrong

The polysaccharide O from the structure of cell wall of Gram negative bacteria has the role of receptor for:
A. Bacteriophage
B. Lectins
C. Enzymes
D. Vitamin A
E. Complement

The component parts of the flagellum are the following:
A. Basal corpuscle, hook (joint), the filament
B. Basal corpuscle and the filament
C. Hook or joint and the filament
D. The helical filament that contains flagellin
E. All answers are wrong

Streptococcus pneumoniae:

A. It is drop or flame in shape
B. It forms group of two (diplo)
C. The group has the aspect of 8
D. The group has a common capsule
E. All answers are true

The heterotrophic bacteria, according to the species can use the following substances, except:

A. Carbon dioxide
B. Glucose
C. Sucrose
D. Starch
E. Lactose

Select a specific substance of the spore:

A. DNA
B. Ribosomes
C. Dipicolinic acid
D. Free water
E. Calcium

How many spores are formed inside of a sporogenic vegetative cell?

A. Two spores
B. One spore
C. Three spores
D. A variable number of spores
E. Four spores

The flagellin from the chemical composition of flagellum represents:

A. The antigen O
B. The antigen K
C. The antigen H
D. The antigen Vi
E. The viral antigen

The immobile bacteria, without flagella are named:

A. Atrichous
B. Peritrichous
C. Lophotrichous
D. Amfitrichous
E. Monotrichous

Select the incorrect statement according to the heterotrophic bacteria:

A. Some use amino acids
B. Some use peptones
C. Some use macromolecules of proteins
D. Some use urea
E. Some use ammonia

Select a bacterial species that is coffee bean in shape:

A. Neisseria gonorrhoeae
B. Streptococcus pneumoniae
C. Enterococcus

D. Corynebacterium
E. All answers are wrong

Vibrio cholerae has only one flagellum on one end. In which group is it included?
A. Lophotrichous
B. Atrichous
C. Peritrichous
D. Amfitrichous
E. Monotrichous

Which of the following bacteria has a true capsule?
A. Pasteurella multocida
B. Klebsiella pneumoniae
C. Bacillus anthracis
D. All answers are true
E. All statements are wrong

Using Gram staining method, Gram positive bacteria are colored in:
A. Red
B. Blue
C. Violet
D. Green
E. Yellow

The plasmids that have an independent existence and temporarily can integrate into chromosome are:
A. Episomes
B. Ergosomes
C. Mesosomes
D. Ribosomes
E. Inclusions

The most plasmides are:
A. Supercoiled, circular double- stranded DNA molecules
B. Uncoiled, circular double- stranded DNA molecules
C. Supercoiled, circular single- stranded DNA molecules
D. Supercoiled, circular double- stranded RNA molecules
E. Supercoiled, circular single- stranded RNA molecules

Which component of the bacterium has role in the protein synthesis?
A. Episomes
B. Vacuoles
C. Mesosomes
D. Ribosomes
E. Inclusions

The roles of the cytoplasmic membrane are:
A. Selective biological filter
B. In the replication of bacteria
C. In the respiratory process of bacteria
D. The place of enzymatic system
E. All variants are correct

Which component of the Gram negative bacteria has the role of endotoxin:

A. Polysaccharide O
B. LPS (lipopolysaccharides complex)
C. Periplasmic space
D. Layer of peptidoglycan
E. Cell membrane

Protoplasts are obtained by treatment of which type of bacteria with lysozyme or penicillin?
A. Gram positive bacteria
B. Gram negative bacteria
C. L forms of bacteria
D. S forms of bacteria
E. R forms of bacteria

Defective wall bacteria include the following except:
A. S forms of bacteria
B. L forms of bacteria
C. Protoplasts
D. Spheroplasts
E. Mycoplasma

Select the correct statement about the bacterial flagella:
A. in Gram positive bacteria the blepharoplast (basal corpuscle) is made from 2 discs
B. in Gram negative bacteria the blepharoplast (basal corpuscle) is made from 4 discs;
C. M disc is located in the cytoplasmic membrane
D. P disc is placed in peptidoglycan layer
E. All answers are true

In which phase of bacterial growth in liquid medium, the activity of cells is the most intense?
A. Phase oh decline
B. Lag phase
C. Stationary phase
D. Exponential phase
E. Phase of adaptation of bacteria to the medium conditions

Which are the triggering factors for sporulation:
A. Depletion of nitrogen
B. Exposure to suboptimal temperature
C. High cells density
D. Depletion of carbon
E. All these factors

What happens in the first phase of the sporulation?
A. Spore septum formation
B. Cortex formation
A. Spore maturation
B. The lysis of mother cell
C. Chromosome replication

What happens in the last phase of the sporulation?
A. Spore septum formation
B. Cortex formation
C. Spore maturation

D. Lysis of the mother cell
E. Chromosome replication

Which factors participate in the resistance of the spore?
A. Keratin like protein
B. Calcium dipicolinate
C. Low free water content
D. Impermeability of spore coat
E. All these factors

At what level of the bacterial envelope (shell), the L disc of the blepharoplast (basal corpuscle) is located?
A. Outer membrane
B. Peptidoglycan
C. Cytoplasmic membrane
D. Above the cytoplasmic membrane
E. All variants are wrong

Select the correct statement about the bacterial vacuoles:
A. They are intracytoplasmic structures
B. They are more common in the old bacterial cells
C. They can be inorganic polymers
D. They can be organic polymers
E. All answers are correct

Which bacteria are baseball bat or cracker in shape?
A. Bacillus anthracis
B. Corynebacterium
C. Fusobacterium
D. Streptococcus pneumoniae
E. Neisseria gonorrhoeae

Select the correct statement about the bacterial inclusions:
A. They are intracytoplasmic structures
B. They are more common in the old bacterial cell
C. They can be inorganic polymers
D. They can be organic polymers
E. All answers are correct

Which structure of the bacterial spore corresponds with the bacterial cell wall of the vegetative cell?
A. Cortex
B. Intine
C. Sporangium
D. Exine
E. Protoplast

Select the prokaryotic microorganisms:
A. Filamentous fungi
B. Yeasts
C. Bacteria
D. Viruses
E. Prions

Which structure of the bacterial spore corresponds with the cytoplasmic membrane of the vegetative cell?

A. Cortex
B. Intine
C. Sporangium
D. Exine
E. Sporal protoplast

Select a bacterial species which is mobile to 20-25°C and immobile to 37°C:
A. Streptococcus pneumoniae
B. Listeria monocytogenes
C. Staphylococcus aureus
D. Bacillus anthracis
E. All responses are wrong

The phase of multiplication of the bacteria in liquid medium which the cell divisions are absent is:
A. Exponential phase
B. Lag phase
C. Stationary phase
D. Decline phase
E. Cell divisions take place in all these phases

Select the correct order of the shells of an encapsulated bacterium from outside to inside:
A. Capsule, wall cell, cytoplasmic membrane
B. Capsule, cytoplasmic membrane, wall cell,
C. Wall cell, capsule, cytoplasmic membrane
D. Cytoplasmic membrane, wall cell, capsule,
E. Cytoplasmic membrane, capsule, wall cell,

Select one from the following structures that is absent from bacteria:
A. Ribosomes
B. Cytoplasmic membrane
C. Nuclear apparatus
D. Cytoplasm
E. Endoplasmic reticulum

The capsule of the most bacteria is formed from:
A. Proteins
B. Phospholipids
C. Polysaccharides
D. Peptides
E. Lipids

Which from the following substances has a negative chemotactic effect for heterotroph bacteria?
A. Amino acids
B. Carbohydrates
C. Lipids
D. Peptides
E. Hydrogen ions

Which bacteria contains teichoic acids:
A. Gram negative
B. Mycoplasma
C. Gram positive
D. Leptospira

E. Salmonella

At what level of the bacterial envelope (shell), the L disc of the blepharoplast (basal corpuscle) of the mobile Gram positive bacteria is located?

A. Outer membrane
B. Peptidoglycan
C. Cytoplasmic membrane
D. Periplasmic space
E. These bacteria don't have L disc

Select the function of bacterial ribosomes:

A. They represent reserve substances
B. They are implicated in chemotaxis
C. They represent the site of protein synthesis
D. They are implicated in aerotaxis
E. None answer is true

The ability of some bacteria to present themselves differently in terms of shape, size and group is called:

A. Polyribosomes
B. Aerotaxis
C. Polymorphism
D. Chemotaxis
E. Germination

Minichromosomes are:

A. Multiple chromosomes in some bacteria
B. Small pieces of RNA
C. Sex pilus
D. Plasmids
E. All statements are wrong

Teichoic acids:

A. They are characteristic of Gram negative bacteria
B. Lipoteichoic acids are anchored to the cell wall
C. Teichoic acids are fixed to the cytoplasmic membrane
D. They protect bacteria against phagocytosis
E. All statements are true

Select the wrong statement about the bacterial flagella:

A. The origin of the filament is the M disc
B. Rotational energy is provided by protons (hydrogen ions) crossing the membrane
C. Rotation of the filament clockwise determines the moving of bacterium in a straight line
D. Flagella contain protein molecules of flagellin
E. Flagellin has antigenic properties

Select the compulsory structures from the bacterial cytoplasm:

A. Plasmids, inclusions, chromosome
B. Chromosome, ribosomes
C. Ribosomes, plasmids
D. Plasmids, inclusions, chromosome, vacuoles
E. Plasmids, inclusions, chromosome, vacuoles, ribosomes

The phospholipids molecules are placed in the double layer of the membrane:

A. With the hydrophilic end to the outside
B. With the hydrophobic end to the outside
C. With the hydrophilic ends face-to-face
D. Only those on the inner layer with the hydrophobic ends to the outside
E. All statements are wrong

It can be stated about the proteins into the cytoplasmic membrane:
A. Intrinsic proteins are usually transmembrane
B. Extrinsic proteins are exposed only on the external surface
C. Extrinsic proteins are exposed only on the internal surface
D. All membrane proteins are transmembrane
E. All statements are wrong

It can be stated about the cell wall:
A. It is an optional structure
B. It is located on the outside of the cell membrane
C. It has pores
D. It contains peptidoglycan
E. All statements are correct

Select the correct statements regarding to the role of the bacterial capsule:
A. Protect the cell against the desiccation
B. Represents a virulence factor
C. It has an antigenic role
D. It is involved in the adhesion of the bacterium to the solid supports
E. All statements are correct

Which type of RNA is not present in the bacterial cell?
A. Transport RNA
B. Mitochondrial RNA
C. Messenger RNA
D. Ribosome RNA
E. Soluble RNA

Select the incorrect statement regarding to the membrane role:
A. It is a mechanical filter
B. It is the site of the bacterial respiratory processes
C. It is involved in the synthesis of the peptidoglycan
D. Synthesis and secretion of the exoenzymes
E. It is the site of enzymatic systems

The bacterial transport systems are located in:
A. Cell wall
B. Capsule
C. Membrane
D. Cytoplasm
E. Ribosomes

Tinctorial affinity of the bacteria is determined by the chemical composition of:
A. The capsule
B. The membrane
C. The wall
D. The mesosomes

E. The chromosome

Select the incorrect statement regarding to the bacterial enzymes:

A. The exoenzymes are released into the extracellular environment
B. The constitutive enzymes are synthesized under certain environmental conditions
C. Adaptive enzymes are synthesized in the presence of the substrate
D. Endoenzymes remain in the bacterial cell
E. Exoenzymes act outside the cell