Who demonstrated that the Great Potato Blight of Ireland was caused by a water mold? - ;M.J. Berkeley

Who showed that the perbrine disease of silkworms was caused by a protozoan parasite? - ;Louis Pasteur

A simple morphology and lack a true membrane-delimited nucleus - ; prokaryotes

What is a morphologically complex and has a membrane-enclosed nucleus? - ;Eucaryotes

What let to the discovery of viruses as disease causing agents? - ;bacterial filter that removed bacteria and larger microbes (Charles Chamberland)

The five kingdom classification scheme is - ; the Monera or Procaryotae, Protista, Fungi, Animalia, and Plantae

What are ribozymes? - ; RNA molecules that form peptide bonds and perform cellular work and replication

The three domain scheme is - ;Bacteria, Archaea, and Eucarya

What are the three bacterial morphology? - ;-bacillus (little red) **Sale COW** -coccus (grain or berry) -spirillum (coiled or helical) What anothe relevant microscopes **O** reght-field microscope -dark-field microscope The three domain scheme is based on? - ;a comparaison of ribosomal RNA

-dark-field microscope

-phase-contrast microscope

-fluorescence microscopes

What is a measure of how greatly a substance slows the velocity of light? - ;Refractive index

The direction and magnitude of bending light in a microscope is determined by the ______ - ; refractive indexes of the two media forming the interface

Which microscope produces a dark image against a brighter background? - ; the bright-field microscope

What is the product of the magnifications of the ocular lens and the objective lens? - ; the total magnification

What is the total magnification of the bright field, dark field, and phase-contrast microscopes? - ;2000x

What is the total resolution of the bright field, dark field, and phase contrast microscopes? - ;0.2um

What is the purpose of the bright field microscope? -; for live and preserved stained specimens

What is the purpose of the dark field microscope? - ; to observe living, unstained preparations

What type of bacteria cell wall is poorly permeable, grows slowly, and are resistant to chemical disinfectants and lysosome-mediated destruction? - ;acid-fast

What are archaea closely related to? - ;Eukarya

What feature do archaea and bacteria have in common? - ; genes for metabolism

What feature do archaea and eukarya have in common? - ;genes encoding protein

What makes archaea highly diverse? - ;morphology, physiology, reproduction, and ecology

In what conditions do archaea grow best? - ;anaerobic, hypersaline, pH extremes, and high-temperature habitats

Archaeal shapes - ;cocci, rods, branched/flat

Archaeal Cell Walls Differ from Bacterial Cell Walls - ;-lack peptidoglycan

-most common cell wall is S layer in archaea

-may have protein sheath external to S layer

-pseudomurein may be outermost layer - similar to gram-positive marco emisms What is the function of the cytoskeleton? - ;-cell layer in 103 -protein localization -determination of cell stape

What is the fuction of FtsZ type nuburn comologs? - ;cell division

What is the function of MreB/Mbl Actin homologs? - ;maintains cell shape, segregates chromosomes, localizes proteins

Cells are often in what kind of solution?

- a. hypertonic
- b. hypotonic
- c. isotonic ;hypotonic

What prevents movement of water into cell, causing swelling and lysis due to osmotic pressure (osmotic lysis)? - ;the cell wall

What does the cell wall not protect against? - ;plasmolysis

When does plasmolysis occur? - ;when cells are in hypertonic solution

What happens during plasmolysis? - ;water moves out of cell causing the cytoplasm to shrivel and pull away from cell wall

Stacks of cisternae are called - ;dictyosomes

What is the function of the Golgi Apparatus? - ;-modification

-packaging

-secretion of materials

Membrane-bound vesicles are called - ;endosomes

Which organelle contains hydrolytic enzymes needed for digestion of macromolecules? - ; lysosomes

The uptake of solutes or particles by enclosing them in vesicles or vacuoles pinched off from the plasma membrane? - ;endocytosis

What are the two types of endocytosis? - ;phagocytosis and pinocytosis

Phagocytosis - ;the uptake of large particles

Pinocytosis - ;uptake of small amounts of liquids with its solute molecules

What is the function of lysosomes? - ;-break down materials and waste

-host defense (destruction of bacteria by white blood cells)

Where can proteasomes be observed? - ;-eukaryotes

-some bacteria

-many archaea

Nonlys a na p

from 103 14 of 103 These ribosomes synthesize non-secretory proteins and non-membrane proteins. (proteins used inside the cell) - ;free ribosomes

These are complexes of mRNA with numerous ribosomes. - ;polyribosomes (polysomes)

The location of enzymes and electron carriers for electron transport and oxidative phosphorylation. -;Mitochondria

Contains ribosomes, mitochondrial DNA, and large calcium phosphate granules - ;matrix

Contains enzymes of the tricarboxylic acid cycle and the β -oxidation pathway for fatty acids - ;matrix

Pigment-containing organelles observed in plants and algae, site of photosynthetic reactions -;chloroplasts

Site of light reactions (trapping of light energy to generate ATP, NADPH, and oxygen) - ;Thylakoids

Participates in polysaccharide synthesis in chloroplast. - ; Pyrenoid

Nuclear envelope - ;-double membrane structure that delimits nucleus

-penetrated by nuclear pores, pores allow materials to be transported into or out of nucleus

The negative logarithm of the hydrogen ion concentration - ;pH Organisms that can grow in pH levels between 0 and 5.5 - ;acidophiles Organisms that can grow in pH levels between 5.5and 7 - ;neutrophiles Organisms that can grow in pH levels between 8.5 and 11.5 - ;alkalophiles Most acidophiles and alkalophiles maintain an internal pH near _____ - ;neutral The optimum temperature is close to the _____ temperature. - ;maximum What is the distance between the minimum and maximum temperatures? - ;30 degrees Psychrophiles - ;Organisms that can grow in extremely cold temperatures (10 degrees C) Psychrotrophs - ;Organisms that can grow in cold temperatures (20 degrees C) Mesophiles - ;Organisms that grow in warm temperatures (35 degrees C) Thermophiles - ;Organisms that grow in hot temperatures (65 degrees C) Hyperthermophiles - ;Organisms that grow in extremely high temperatures (90 degrees C What type of organisms have more saturated fatty acids? - ;Hyperthern **Chrychrophiles** What type of organisms have more unsaturated f Organisms that need oxygen. - ;Obligat Facultative anae Organisms that prefe ns that don't need oxy te still grow in the presence of oxygen. - ;Aerotolerant anaerobe Organis

Organisms that cannot grow in oxygen. - ;strict anaerobe

Organisms that require a less concentration of oxygen that is present in the atmosphere. - ;Microaerophile

What are the two enzymes produced by obligate aerobe and facultative anaerobe to protect them from toxic compounds? - ;-superoxide dismutase (SOD)

-catalase

Which organism produces only SOD? - ;aerotolerant anaerobe

Which organism does not produce SOD or catalase? - ;strict anaerobe

Which organism produces SOD and low levels of catalase? - ;microaerophile

Barotolerant organisms - ;adversely affected by increased pressure, but not as severely as nontolerant organisms

Barophilic organisms - ;require or grow more rapidly in the presence of increased pressure

What are the effects of ionizing radiation on certain organisms? - ;-mutation ---> death

What is an example of an amphibolic pathway? - ;-the Pentose Phosphate Pathway

-Kreb's cycle

What is the source of electrons for the Pentose Phosphate Pathway? - ;the NADH produced

Which cycle completes oxidation and degradation of glucose and other molecules? - ;Kreb's cycle

During the Pentose Phosphate Pathway, how is ATP produced? - ;No ATP is produced. NADH is converted into NADH

In what organisms is the Kreb's cycle common? - ;aerobic bacteria, free-living protozoa, most algae, and fungi

For each acetyl-CoA molecule oxidized, the TCA cycle generates: - ;2 molecules of CO2

3 molecules of NADH

one FADH2

one GTP

What is oxidized in the electron transport chain? - ;most ATP made from NADH and FADH. What do reducing agents do in Redox reactions? - ;donate electrons What do oxidizing agents do in redox reactions? - electronsceptor A measurement of the tendency of the uning agents to lose electrons. ;Standard Reduction Potential Is pyruvate reduce in tradized during fermentation? - ;reduced What reduces pyruvate during ermentation? - ;NADH

What does NADH reduce pyruvate to during fermentation? - ;Lactic Acid

What is the electron acceptor in fermentation? - ;pyruvate or pyruvate derivate

Can amino acids be fermented? - ;yes

In the Electron transport and Oxidative Phosphorylation pathways, how is ATP produce? - ;When NADH and FADH2 are oxidized

What enzyme is used to hydrolyze fatty acids to glycerol? - ;lipase

What is produced during the glycolytic pathway from 2 NADH? - ;5 ATP and 2 ATP

Can bacteria use other carbohydrates than glucose? - ;yes

How many ATP are produced in the Crab Cycle? - ;5 ATP

How many ATP are produce in the Tricarbon Acid Cycle at substrate level phosphorylation (GTP)? - ;2 ATP

How many ATP are produce in the Tricarbon Acid Cycle during oxidative phosphorylation with 6 NADH? - ;15 ATP

C. Viroid RNA does not serve as mRNA nor does it direct the synthesis of mRNA.

D. Extracellular viroids have a lipid bilayer envelope. - ;D. Extracellular viroids have a lipid bilayer envelope.

Which of the following can serve as phage receptor sites?

A. lipopolysaccharides and teichoic acids

B. pili

C. membrane proteins

D. All of these can serve as phage receptor sites - ;D. All of these can serve as phage receptor sites

T or F The presence or absence of an envelope is not useful in classifying viruses because any given virus may at one time have an envelope and at another time not have an envelope. - ; false

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What do the EM and ED pathways have in common?

A. They are considered types of glycolytic pathways

B. They require oxygen

C. They are found only in obligate anaerobes

D. All of the above - ;A. They are considered type

What do the EM and ED pathway

A. They are considered of

B. They require oxygen

C. They are found only in obligate anaerobes

D. Both can be found in some bacteria

E. Two of the above. - ;A. They are considered types of glycolytic pathways

T or F Metabolic pathways can be either catabolic or anabolic but not both - ;false

Which of the following is not a mechanism by which viruses cause cancer?

A. They carry a cancer-causing gene into the cell.

B. They can insert a promoter upstream of a cellular gene that regulates cell growth and reproduction.

C. They produce defective interfering particles.

D. An expression of viral proteins results in abnormal expression of genes that regulate cell growth and reproduction. - ;C. They produce defective interfering particles.

T or F Both ED and EM pathways are very common in bacteria - ;false

T or F Parvoviruses are the simplest known animal viruses. - ;true

Which of the following is (are) a function(s) of late viral proteins?

A. formation of the virion capsid

- B. assembly of mature virions by noncapsid proteins
- C. lysis of host cells

D. All of these are functions of late viral proteins - ;D. All of these are functions of late viral proteins

T or F The Voges-Proskauer test is positive for butanediol fermenters but negative for mixed acid fermenters. - ;True

Which events are part of TCA cycle?

A. Citrate reacts with oxaloacetate to form acetyl CoA

B. Glucose is converted to fructose

C. NAD is regenerated

D. Carbon dioxide, reduced co-enzymes, and ATP (GTP) are produced - ;D. Carbon dioxide, reduced coenzymes, and ATP (GTP) are produced

T or F Metabolism of fats produces more ATP molecules per gram that real bolism of carbohydrates or proteins. - ;true

. Which of the following is most true of a fr LDNA genome?

A. It uses the same four nity enous bases foun in pipea, otic and eucaryotic DNA.

B. It manage the normal bases to the procaryotic and eucaryotic DNA, or it may have one or more unusual bases.

C. It is usually composed of unusual bases unique to virues.

D. Viruses do not use DNA for their genome. - ;B. It may have the normal bases found in procaryotic and eucaryotic DNA, or it may have one or more unusual bases.

The number of ATP molecules generated per atom of oxygen that is reduced electrons are passed from NADH or reduced FAD (FADH) to dioxygen

- A. utilization ratio
- B. energy yield
- C. P/O ratio
- D. phosphorylation coefficient ;P/O ratio

Which liberates the most energy in the formation of ATP?

- A. Alcohol fermentation
- B. Sugar fermentation

D. neither protect the viral genetic material nor aid in the transfer of the viral genetic material between host cells - ;C. both protect the viral genetic material and aid in the transfer of the viral genetic material between host cells

In the TCA cycle, two carbons are removed from citric acid in the form of ______, thereby regenerating oxaloacetate to complete the cycle.

A. acetyl-CoA

B. ethanol

C. carbon dioxide

D. methanol - ;Carbon dioxide

T or F The most efficient pathway for ATP production in animal cells is by glycolysis. - ;false

Attachment of a bacteriophage to its host is mediated by

A. specific surface proteins on the bacteriophage

- B. specific receptor proteins on the host cell
- C. both specific surface proteins on the bacteriophage and specific rectipite proteins on the host cell

D. either specific surface proteins on the bacteriophyge on specific receptor proteins on the host cell but not both - ;C. both specific surface proteins on the bacteriophage and province first receptor proteins on the host cell

nino group through

Amino acids are pr

B. transamination

A. dean ination

C. either deamination or transamination

D. neither deaminiation or transamination - ;C. either deamination or transamination

The major function(s) of the TCA cycle is(are)

A. energy production

B. provision of carbon skeletons for biosynthesis of cell components

C. both energy production and provision of carbon skeletons for biosynthesis of cell components

D. neither energy production nor provision of carbon skeletons for biosynthesis of cell components - ;C. both energy production and provision of carbon skeletons for biosynthesis of cell components

The major function(s) of the TCA cycle is(are)

- A. energy production
- B. provision of carbon skeletons for biosynthesis of cell components

C. direct oxidation of 4 and 5 carbon sugars during anaerobic growth

D. energy production and provision of carbon skeletons for biosynthesis of cell components - ; D. energy production and provision of carbon skeletons for biosynthesis of cell components

30. During breakdown of fatty acids, carbons are removed at a time as .

- A. one; carbon dioxide
- B. one; methane
- C. two; acetyl-CoA
- D. two; ethanol ;C. two; acetyl-CoA

The most common type of molecule functioning as an animal virus receptor is a

- A. lipoprotein
- B. glycoprotein
- C. phosphoprotein
- D. teichoic acid ;glycoprotein

ucleic acid penetrates the cell T or F The injection mechanism used by bacteriophages where the second leaving the protein coat outside is not used by an k two shimal viruser; false A _____ genome exists as even Deparate, nonideptical more cores that may be packaged together or separately. A. diploid P 206

- B. segmented
- C. polyploid
- D. fractionated ;segmented

Viruses with single-stranded RNA as their genome for which the base sequence is the same as the viral mRNA are said to be _____ viruses.

- A. plus-stranded
- B. minus-stranded
- C. mRNA-like
- D. None of these ;plus-stranded

In which of the following stages of the viral infectious cycle do enveloped viruses usually acquire their envelopes?

A. penetration

B. component biosynthesis

- C. assembly
- D. release ;release

Which of the following is NOT true regarding ATP synthases?

- A. They require proton motive force to make ATP.
- B. They span the inner membrane of mitochondria.
- C. The proton flow is outward during ATP synthesis.

D. The subunits of ATP synthase undergo conformational changes during ATP - ;The proton flow is outward during ATP synthesis

Which of the following statements concerning the proton motive force is correct?

- A. This takes place only in bacteria
- B. It reduces organic carbon compounds
- C. PMF is based on the differential concentration of the proton across the merophology
- D. All of the above ; PMF is based on the differential concer e proton across the membrane

Which of the following statements concern ton motive

- A. This takes place only in
- B. It redu arbon com
- C. PMF is based on the differential concentration of the proton across the membrane

D. A, B, and C are correct. - ; PMF is based on the differential concentration of the proton across the membrane

What takes place when pyruvate is converted to acetyl CoA?

- A. One molecule of carbon dioxide is given off
- B. One molecule of FADH2 is produced from FAD
- C. The conversion takes place in the cytoplasm
- D. All of the above
- E. Only A and C are correct. ;Only A and C are correct.

What takes place when pyruvate is converted to acetyl CoA?

- A. One molecule of carbon dioxide is given off
- B. One molecule of FADH2 is produced from FAD

D. plant-phototrophs - ;b

When a rival genome is integrated into the host chromosome but does not result in the lysis of the host cell, it is referred to as

- A. lysogeny
- B. avirulent infection
- C. temperate infection
- D. alytic infection ;a

What happens to the oxygen that is used in cellular respiration?

- A. It is oxidized to from water
- B. It is lost
- C. It is reduced to form water
- D. It is converted to carbon dioxide ;c
- iew from Notesale.co.uk Bage 66 of 103 electron conor in 2 The ______ is the electron acceptor in a redox reaction.
- A. oxidant
- B. reductant
- C. enzyme

D. product ,a

- The is the electron conor in a redox reaction.
- A. oxidant
- B. reductant
- C. enzyme
- D. product ;b

T or F Some endergonic reactions can be made to proceed forward if they are coupled to hydrolysis of one or more of the phosphates of ATP. - ;true

- . Enzymes reduce the activation energy for a reaction by
- A. bringing the substrates together at the active site, in effect concentrating them.
- B. bringing the substrates together at the active site correctly oriented for the reaction.
- C. neither of these answers is correct.
- D. Both A and B are correct. ;d

Anaerobic respiration encompasses which of the following

- A. assimilatory nitrate reduction
- B. dissimilatory nitrate reduction
- C. denitrification
- D. both B and C ;d

Which fermentation pathway is detected using in the methyl red test when differentiating among enteric bacteria?

- A. butanediol fermentation
- B. mixed acid fermentation
- C. ethanol fermentation
- D. lactic acid fermentation
- E. proprionic acid fermentation ;b
- lew from Notesale.co.uk page 79 of 103 In the ETC, what is being "pumped" across the membrane?
- A. H+
- B. e-
- C. NADHD
- Which of the following does not occur in the Krebs cycle?
- A. redox reactions

D. ADP

- B. production of NADH
- C. production of FAD+
- D. production of carbon dioxide
- E. synthesis pf ATP ;c

Which of the following terminal electron acceptors has the greatest potential to provide the largest amount of free energy?

- A. CO2
- B. NO3
- C. O2
- D. Fe3+

Which of the following does not occur in the Kreb's Cycle?

a. redox reactions

b. production of NADH

c. production of FAD+

d. production of CO2 - ;c. production of FAD+

Which of the following terminal electron acceptors has the greatest potential to provide the largest amount of free energy?

a. CO2

b. NO3

c. O2

d.SO4 - ;O2

All of the following are the end products of glycolysis except:

a. pyruvate

- b NADH
- c. NADP
- d. CO2

e. Two

nof the above 90 of 103 acterial mer The proton gradient across bacterial membranes is involved in:

a. generation of ATP in the presence of an external electron acceptor

b. active transport of some ions

c. rotation of bacterial flagella

- d. all of the above
- e. two of the above ;d. all of the above

An electron carrier that is used in harvesting energy from glucose molecules in a series of gradual steps in the cytoplasm of bacteria is:

- a. pyruvate
- b. FAD
- c. ATP
- d. NAD+

b.The cell walls of Gram Positive bacteria c.The cell walls of Gram Negative bacteria d.the cell membranes of all prokaryotes e.two of the above are correct - ;b.The cell walls of Gram Positive bacteria Which of the following is true of all viruses? a.They contain DNA b.They contain RNA c.They result in the direction destruction of their host d.They contain nucleic acid e.None of the above is true - ;d. They contain nucleic acid Unlike the more familiar form of respiration that vertebrate cells practice, anaerobic respiration Notesale.co.uk a.does not utilize an electron transport system b.does not utilize chemiosmosis to make ATP c.does not need a terminal electron to make ATP d.produces oxygen rather than consur t on acceptor - ;e.utilizing carbon dioxide or nitrate e.utilizing carbon dio i re trate as terminal as term Caro Which of the following are involved in alcoholic fermentation, either as products or reactants: a.ethanol b.lactic acid c.carbon dioxide d.both A and B e.both A and C - ;e.both A and C Which statement concerning thermophilic bacteria is correct? a. They can survive at temperatures above 45C but they cannot grow b.Their optimum growth temperatures range from 15C to 45C c.They grow best at temperatures above 45C d.They group includes many important pathogens

e.They can grow at higher temperatures, but their optimum growth temperatures range from 15C to 45C - ;c.They grow best at temperatures above 45C

The product of Fermentation which is most important for the cell survival is:

a.NADH

b.ATP

c.Alcohol

d.CO2

e.NAD+ - ;ATP

An increase in magnification causes:

a.Decrease in the field of view

b.Decrease in the working distance

c.All of the above

T or F: In the process of fermentation an organic substrate, such as periods, is reduced and an intermediate of the pathway, such as pyruvate, is total (e). The second se

- a. They lack nuclea
- b. Mito hondria are present
- c. Chloroplasts are present
- d. They have cell membrane

e. They all contain histone proteins - ;d. They have cell membrane

T or F: The rotation of bacterial flagella is powered by ATP hydrolysis - ;false

If you had a define medium, which choice, when added, would make the medium complex?

- a. 5 gram of NaCl
- b. 10ml of 100% ethanol
- c. 0.1% of pure lactose
- d. 5 gram of beef extracts powder
- e. none of the above ;d. 5 gram of beef extracts powder

T or F: A drug that disrupts a microbial function not found in animal cells usually has a lower therapeutic index. - ;true

d. All of the choices - ;Splicing to remove introns

The strand of DNA for a particular gene that is copied by the RNA polymerase to form mRNA is called the strand.

- a. leading
- b. template
- c. transcription
- d. copy ;templete

The enzyme sequentially that links adjacent amino acids into the growing polypeptide chain.

- a. Ligase
- b. Peptidyl Transferase
- c. Lyase
- d. Phosphorylase ;Peptidyl Transferase

- Which of the following is not considered the final product of the expression of arg in a a polypeptide chain b. an mRNA molecule c. a tRNA molecule d. an rinn indecule , an mRNA molecule When a recipient cell requires a piece of naked DNA from the card When a recipient cell requires a piece of naked DNA from the environment it is called
- A. conjugation
- B. transformation
- C. transduction
- D. translocation ;transformation

Transfer of genetic information via direct cell-cell contact is called

- A. transformation
- **B.** Transduction
- C. Transfection
- D. Conjugation ;conjunction
- T or F: Point mutation is not always deleterious ;true

Which of the following organisms has no motile cells at any point of their life-cycle?

Which of the following processes can be used to bring nutrients in a cell against a concentration gradient.

- A. active transport
- B. facilitated transport
- C. active transport and facilitated transport ;active transport

T or F: Cooper (Cu) is considered a micronutrient. - ;true

T or F: The size and shape of a colony is not useful for identification of a microorganism because most microorganisms produce colonies that are indistinguishable from one another - ;false

T or F: Although similar in function the eukaryotic ribosome is generally smaller and more complex than the prokaryotic ribosome. - ;false

Moist heat sterrilation at 100 degrees celcius kills all the following except

A. bacterial endospores

B. fungal spores

C. Viruses

D. bacterial endospores and fungal spores - ;bacterial

tesale.co.uk ms are actively growing -T or F: The effects of most antimigro greater if the mic ;false

both strands - ;true T or F