What regions are poplar nonpolar in a membrane? - ***CORRECT ANSWER***-1)the phosphates are Polar, water lovin, hydro philic regions that face the outside.

2) Nonpolar, hydro phobic carbon chain regions face the inside.

Explain glycolipids structure. - ***CORRECT ANSWER***-glycolipids have 3 carbon backbone with

2 Carbon chains attached by an ester group.

THe third carbon has a carbohydrate

What do steroids look like? - ***CORRECT ANSWER***-Slightly amphipathic 4 ring structures

lipids are insoluble. So how do they move through the blood? - ***CORRECT ANSWER***-They are usually carried by lipoproteins, like HDL or LDL.

What are the major classes of lipoproteins? - ***CORRECT ANSWER***-1) Chylomicrons which are the largest

2) VLDLs these are low denstiy, but large.

3) LDLs

4) HDLs. these high density lipids are the smallest, and called good proteins.

What are proteins made up of? - ***CORRECT ANSWER***-one or more chains of amino acids, perhaps in a crazy ass arrangement.

describe amino acid structure. - ***CORRECT ANSWER***-Amino acids have 4 parts attached to the alpha carbon.

1. the amino group, which is NH2

2. the R group, which is one of 20 choices

3. the Carboxylic acid or C O O

the last thing attached to the Carbon is the Hydrogen.

What are the basic amino acids? - ***CORRECT ANSWER***-Hal

Histidine

In what direction does RNA polymerase synthesize? - ***CORRECT ANSWER***-Same as DNA polymerase.

5' to 3'

How fast is transcription compared to replication? - ***CORRECT ANSWER***-Much slower

Which produces more errors? Why? Trx or Replication? - ***CORRECT ANSWER***-Trx

Unlike replication, there is no proof-reading and repair system for try.

At what point is the most common for regulation of protein production? Why? - ***CORRECT ANSWER***-Transcription

Replication occurs less often and doesn't distinguish between genes.

T/F: The process of replication and try are E intensive. - ***CORRECT ANSWER***-True

How much E is required to add a nucleotide? - ***CORRECT ANSWER***-1 ATP

When does post-transcriptional processing occur? - ***CORRECT ANSWER***-Before the RNA leaves the nucleus

What is post-transcriptional processing? - ***CORRECT ANSWER***-1) Splicing: removal of introns

2) 5' cap

3) poly A tail

Does post-transcriptional processing happen to prokaryotes? - ***CORRECT ANSWER***-Usually only to rRNA and tRNA

What is recombinant DNA? - ***CORRECT ANSWER***-Spliced dNA formed from two or more different sources that have been cleaved by restriction enzymes and joined by ligases. Genetically

How many gametes are formed during spermatogenesis? - ***CORRECT ANSWER***-4 gametes

How many gametes are formed during oogenesis? - ***CORRECT ANSWER***-1 gamete

How many eggs are a human female born with? - ***CORRECT ANSWER***-400,000

At the time of birth, at what stage are female eggs at? - ***CORRECT ANSWER***-Primary oocyte stage

What happens at puberty? - ***CORRECT ANSWER***-One oocyte undergoes meiosis.

What is released upon each nuclear division of oocyte meiosis? - ***CORRECT ANSWER***-A polar body

Why are polar bodies produced? - ***CORRECT ANSWER***-To conserve cytoplasm.

Where are primary oocytes found? - ***CORRECT ANSWER***-In the ovary

What is a primary oocyte? - ***CORRECT ANSWER***-Oocyte present at birth

Arrested in Prophase I

What is a secondary oocyte? - ***CORRECT ANSWER***-Oocyte released during ovulation

Arrested at Metaphase II.

What is a virus composed of? - ***CORRECT ANSWER***-1) DNA or RNA

2) Capsid - Protein coat

3) Lipid envelope

How many genes does a virus typically have? - ***CORRECT ANSWER***-1 - several hundred genes

How is the lipid envelope gained in a virus? - ***CORRECT ANSWER***-A reverse endocytotic process

What is a bacteriophage? - ***CORRECT ANSWER***-1) Icosahedral (20)

2) Tail fibers - attach to host receptor protein

Can viruses have both DNA and RNA? - ***CORRECT ANSWER***-No

Are viruses living organisms? - ***CORRECT ANSWER***-No

What explains the species barrier of viruses? - ***CORRECT ANSWER***-A virus typically requires a specific glycoprotein on the cell membrane in order to infect the cell.

Describe the life cycle of a virus. - ***CORRECT ANSWER***-1) Virus connects with specific glycoprotein receptor on host cell.

2) Nucleic acid injected into bacterium/Virus taken into animal cell by endocytosis

3) Lysosome attaches to phagosome, capsid released into cytosol via exocytosis, before lysosome can digest virus.

4) Lytic or lysogenic.

Define lytic cycle. - ***CORRECT ANSWER***-Viral nucleic acids commandeer host

Create new virions

Lyse the cell to release virions

What is a virion? - ***CORRECT ANSWER***-The complete, infective form of a virus outside a host cell, with a core of RNA or DNA and a capsid.

Metabolically inactive

Define lysogenic cycle. - ***CORRECT ANSWER***-Viral nucleic acids become incorporated into host genome

Viral genes may remain inactive indefinitely

Viral genes incorporated into daughter cells

What is an endospore? - ***CORRECT ANSWER***-High resistance to heat and lethal agents.

In order to grow, what three things do all organisms need? - ***CORRECT ANSWER***-Carbon, Energy, and electrons

How do we classify organisms? - ***CORRECT ANSWER***-Autotrophs - use CO_2 as carbon source

Heterotrophs - rely on organic matter for carbon

Phototrophs - E from sun

Chemotrophs - E from chemicals

Lithotrophs - e from inorganic matter

Organotrophs - e from organic matter

What are the three division of fungi? - ***CORRECT ANSWER***-1) Zygomycota

2) Ascomycota

3) Basidiomycota

Most fungi have what kind of cell wall? - ***CORRECT ANSWER***-Septa - made from polyssacharide called chitin, which is strongly resistant to microbial attack.

What is a mycelium and hyphae? - ***CORRECT ANSWER***-Mycelium: The vegetative part of a fungus, consisting of a network of fine white filaments (hyphae).

Hyphae: Each of the branching filaments that make up the mycelium of a fungus. HAPLOID

Fungi live most of their life cycle as haploid or diploid? - ***CORRECT ANSWER***-Haploid. Only a brief time as diploid.

Are fungi capable of asexual or sexual reproduction? - ***CORRECT ANSWER***-BOTH

How does glu, gal, and fructose move across the basolateral side of the enterocyte to be absorbed into the blood? - ***CORRECT ANSWER***-Facilitate diffusion

Where do the capillaries of the intestine drain, and ultimately to where? - ***CORRECT ANSWER***-The hepatic portal vein, to the liver

What part of protein breakdown occurs in the stomach? - ***CORRECT ANSWER***-HCl denatures proteins

Pepsin begins to attack the middle of the polypep chains

Do proteins get absorbed in the stomach? - ***CORRECT ANSWER***-NO

What enzymes (and from where) break down polypeptides? - ***CORRECT ANSWER***-Trypsin, Chymotrypsin (Pancreas) => Di, tripeptides

What reduces small polypeptides to amino acid? - ***CORRECT ANSWER***-Brush border enzymes

What enzymes complete the breakdown to basic components? - ***CORRECT ANSWER***-Brush border enzymes. The enzymes of the pancreas break macromolecules into smaller pieces.

How does the enterocyte absorb amino acid and a few di and tripeptides? - ***CORRECT ANSWER***-Secondary active transport down the conc gradient of Na

T/F: Only separate amino acid enter the blood. - ***CORRECT ANSWER***-True. A few di and tripeptides enter the enterocyte, but are broken down within the enterocyte before being allowed to enter the blood.

Where and what emulsifies fat? - ***CORRECT ANSWER***-Bile, in the duodenum.

What does lipase do? - ***CORRECT ANSWER***-Breaks Tri-glyceride into Fatty Acid and monoglycerides.

Where is urine created in the kidney? - ***CORRECT ANSWER***-Medulla, and then emptied into renal pelvis which rains into the ureter, to bladder

What is the functional unit of the kidney? - ***CORRECT ANSWER***-Nephron (juxtamedullary)

What is a nephron? - ***CORRECT ANSWER***-Renal corpuscle:

Glomerulus

Bowman's

Conv Prox Tub

Loop of Henle:

Thin Desc

Thin Asc

Thick Asc

Distal tubule

Collecting duct

Vasa recta

Juxtaglomerular apparatus

What affects filtration rate? - ***CORRECT ANSWER***-1) Polarity, Charge and Size of objects

2) Glomerular blood pressure

3) Osmotic pressure

Where do aldosterone and ADH act? - ***CORRECT ANSWER***-Distal tubule

ADH also acts on collecting duct

How does aldosterone work? - ***CORRECT ANSWER***-Causes K secretion

Reabsorption of Na

How does ADH work? - ***CORRECT ANSWER***-Absorption of water

"always digging holes" in collecting duct so water can passively diffuse out of it.

What are the vasa recta? - ***CORRECT ANSWER***-Capillary beds around the loops of henle. The blood flow of the VR is in the opposite dirxn of the filtrate flow and allows for the maintenance of the conc of the medulla.

What is the juxtaglomerular apparatus? - ***CORRECT ANSWER***-Helps to ctrl the GFR by changing renal arteriole resistance.

What are macula densa cells and where are they located? - ***CORRECT ANSWER***-Distal tubule

Monitor filtrate volume and Na conc.

When filtrate volume is low, the MD release a signal that lowers the resistance to the efferent arterioles. This incr the hydrostatic pressure in the glomerulus, causing the filtrate rate to increase.

When filtrate vol is low, there's more time to absorb Na, so Na conc decr. In response, renin is released into the blood from the JG cells.

What does renin do? - ***CORRECT ANSWER***-Enzyme that cleaves angiotensinogen to angiotensin I => angiotensin II. ATII constricts the efferent arterioles, further increasing the glomerular pressure and FR. And stimulates the release of aldosterone.

What part of the heart is the strongest and why? - ***CORRECT ANSWER***-LV

Must pump blood throughout the entire systemic circulatory system.

What are the names of the 2 circulatory systems? - ***CORRECT ANSWER***-Systemic - to ts

Pulmonary - to lungs

How much of the blood does the systemic circulation contain? - ***CORRECT ANSWER***->80%

Pathway - ***CORRECT ANSWER***-LV, aorta, arteries, arterioles, capillaries, venules, veins, vena cava, RA, RV, Pul art, pul arteriols, cap, venules, veins, LA, LV

How thick is a capillary wall? - ***CORRECT ANSWER***-One cell thick

What is the diameter of a capillary? - ***CORRECT ANSWER***-~RBC diameter

Where does gas exchange occur? - ***CORRECT ANSWER***-Alveoli and the capillaries

How thick is a single alveolus? - ***CORRECT ANSWER***-One cell thick.

What is the composition of air? - ***CORRECT ANSWER***-79% N

21% O

What is the composition of exhaled air? - ***CORRECT ANSWER***-79% N

16% O

5% CO2

What happens to the CO2 removed from the blood? - ***CORRECT ANSWER***-CO2 + H2O carbonic anhydrase => carbonic acid

Conc of carbonic acid decreases, pH of blood rises.

Does the pH of the blood increase or decrease while in the tissues? - ***CORRECT ANSWER***-Decreases

BC tissues release CO2

What is the ratio of Fe binding to O? - ***CORRECT ANSWER***-1 Fe : 1 O

How many oxygens are carried by one molecule of Hb? - ***CORRECT ANSWER***-4

How many Hb in a RBC? - ***CORRECT ANSWER***-280E6

What is cooperativity? - ***CORRECT ANSWER***-When the first O2 binds to Hb, it's affinity for O2 at the other 3 binding sites increases.

What affects Hb's affinity for O2? How? - ***CORRECT ANSWER***-1) pH