March 23, 2016

EXAM 2

STRATEGY
1. READ QUESTION BY QUESTION SLOWLY
2. DECIDE WHETHER YOU CAN ANSWER IT
3. MAKE NOTES ON KEYWORDS - SKETCH A PICTURE IF HELPFUL
4. START WITH QUESTION YOU KNOW BEST

Membrane Structure and Function

Besides providing the border of a cell, explain the three main functions of the plasma membrane.
- organelles of different functions
- toxins
- ions

List the membrane-bound organelles of a eukaryotic cell
- nucleus, ribosomes, endoplasmic reticulum, Golgi apparatus, vacuoles, lysosomes, mitochondria (ER not include)
- plants: chloroplasts

Explain the main characteristics of the lipid bilayer
- phospholipids are a great *example of emergent properties* : amphipathic nature - asymmetry - fluidity, selective permeability, low energy arrangements

Explain why phospholipids have a hydrophilic head and hydrophobic tails
- most stable energy configuration - gives rise to select permeability and a useful flexible strength
- hydrophilic head water-loving - allows the head to face outward
- hydrophobic tails create a flexible inner space

Explain flexion, rotation, lateral diffusion, and flip-flop
- because of their hydrocarbon tails, lipids are able to rotate and flex. Using enzymes scramblase and flippase they sort the lipids into the correct layer.

Explain the role of cholesterol in regulating membrane fluidity
- cholestrol has a hydrocarbon ring near its head that enables flexibility but not too much
- comprises half but less weight
- also amphipathic and it keeps the outer head rigid while allowing for some movement of the lipid tails

Explain the main characteristics and functions of membrane proteins
- **transporters** - move ions in and out
- **enzyme** - communicate and catalyze reaction