Lecture 17: Active Learning Questions

1. What is the difference between the conductive and respiratory zones? What are required for a functioning respiratory zone?

2. Where does gas exchange take place? Where is the highest concentration of carbon dioxide within the human body? Where is the highest concentration of oxygen?

3. What iron-containing protein molecule carries oxygen (O$_2$) in the blood? How many O$_2$s are carried by each protein molecule? What poisonous and potentially lethal gas binds with more than 200-fold greater affinity than O$_2$ to its iron-containing binding site? Name two sources of this poisonous and lethal gas.

4. What organs besides the lungs are adversely affected by cigarette smoke? What happens to cilia when they are exposed to cigarette smoke? Why do cigarette companies add ammonia to cigarettes? What is emphysema and what is a major cause?

5. E-cigarettes and vaping are viewed as benign by the lay public. What happens to methicillin-resistant Staphylococcus aureus (MRSA) when it is exposed to vapors from e-cigarettes? The solvents in which the nicotine and flavors are dissolved can breakdown or be transformed into carbonyls like formaldehyde. What is the risk of exposure to formaldehyde?