1. You are given a leadership role in the World Health Organization (WHO). You can have three initiatives to reduce global disease (infectious and/or non-infectious). What three risk factors would you choose to try to alter, and how do you think these changes would decrease disease incidence?
   My answer: Strive for limited production of cigarettes by either having a set amount yearly produced or increase the cost of the cigarettes itself or through tax. This would hopefully discourage the purchase of smoking so the person and those around them can be healthier. I could also do the same for alcohol purchases. Increase funding for better water cleaning services and better maintenance of pumps/pipes for cleaner water. This would limit the transmission of pathogens within unsafe water.

2. A friend is diagnosed with skin cancer. Luckily it was stage “0/zero” of malignant melanoma. They want to know how this could have happened and what it means. Explain the steps required for a "normal" cell to become a cancer cell and why a stage “0” diagnosis is better than a stage “4” diagnosis.
   My answer: For a normal cell to become cancerous there are multiple stages. First is it could originate from a mutation of a cell, or carcinogens like smoking and pesticides coming into contact with a person, or they could have inherited a mutated gene. Normally a damaged cell would die out through apoptosis or just become a different cell because an organ needed it. Cancer forms from multiple damaged cells constantly going through mitosis and apoptosis not happening.Stage 0 is the "best" diagnosis, since cancer is just bad in general, because it means that it is highly unlikely that cancer has spread into other organs of the body and the cancer is centralized. This should be a lot easier for the doctors to deal with.

3. Describe what happens to regulate blood glucose (1) when glucose levels are rising after a meal and (2) when glucose levels are declining a long time after a meal. Include in your answer the words: pancreas, liver/skeletal muscle, insulin, glucagon, glucose, glycogen.
   My answer: Soon after a meal, the pancreas releases insulin that binds to receptors on muscle and liver cells. These cells take glucose out to the blood and store it as glycogen. Long after a meal, the pancreas releases glucagon, which targets different receptors and causes glycogen to be released back into the blood. This is called homeostasis since the insulin and glucagon are working opposite each other to maintain relative balance.

4. Explain in your own words what “reduction of bias” and “peer review” mean in science.
   My answer: Reduction of bias: to reduce preconceived notions of a study based on personal experience related to things like ethnicity, age, or gender. It is a way of interpretation that has been altered that is not staying true to the study's objective or the ethics of science. Peer review: Where others are giving constructive feedback on a study to make sure that the author is staying true to the objective of the study. Often the outcome of a peer review is completely different from the initial draft because it has gone through extensive rewriting and editing.