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Chapter 2 Questions

2. There are three different safeguards that are used to ensure animal research is conducted ethically. The three R's are Replacement, Reduction, and Refinement. Throughout the course of the experiment, it is important for all researchers to take a step back and think critically about if the experiment they are conducting is ethical for the animals. It is equally as important to educate researchers on what is an ethical practice and what is unethical. I agree with the ethical limitations set by researchers to ensure the safety of the animals.

4. There are differences between a hypothesis and a theory. A hypothesis is a predicted outcome of a scientific experiment. An example of a hypothesis is testing out which brand of soil is better to grow a certain type of plant and testing that hypothesis by conducting an experiment.

A theory is an explanation of the natural world that is generally accepted by the scientific community. For example, it is widely accepted by scientists that the universe was started by the Big Bang.

6. The difference between a population and a sample matter when conducting research. Population refers to an entire group of individuals or items while samples refer to a select percentage of the population to use in the research or study. For example, in a study about a

university, it would be nearly impossible to get a hold of every student that attends the school. So you take a sample of the population, maybe 100 people to conduct your study.

12. An advantage of using this type of study design is that the survey is easily accessible and quick to answer for the participants. It doesn't require physical contact of any type and the study can be completed in a timely fashion. A disadvantage of this type of study design is that out of the 3,000 people on the phone call list, we aren't sure what percentage of people fit our criteria and are able to participate in our survey.

16. Debriefing happens after a study or research is concluded. It gives the participants time to reflect on their experiences, thoughts and feelings they had during the study/research. The participants' feedback can be used by researchers so that they may find new or better ways to go about their research. It is also important of ethical practices to ensure the participants were being treated fairly and with respect.

Chapter 3 Questions

30. A genotype refers to the genetic information carried in an organism's DNA. The genetic information carried can either be a dominant or recessive gene. An example of a genotype is eye color. If both parents have brown eyes and their offspring has blue eyes, the brown eyes gene is the dominant trait while the blue eyes gene is a recessive trait.

A phenotype deals with observable traits such as physical and behavioral traits that are expressed in an organism. These traits are a result of both the organism's genotype and the

environment it lives in. An example of a phenotype is the different color furs a dog can have such as black, blonde, or brown.

31. Charles Darwin's theory of evolution is about how organisms favor traits that enable them to survive longer and enable them to reproduce. Because of limited resources, organisms with favorable traits pass those traits down to their offsprings and so on. I agree with his theory because of the concept of extinction. Both animals or plants that have gone extinct are no longer on the planet anymore because they weren't able to adapt quick enough to their environment or predators.

38. The corpus callosum divides the brain into the left and right hemispheres. It allows both sides of the brain to communicate and transfers motor, sensory and cognitive information between both sides of the brain.

41. The occipital lobe is at the back of the brain and is responsible for visual perception. The hippocampus is essential for learning and memory and it is a part of the lymbic system.

46. The sickle cell gene doesn't benefit those living in the United States but is an advantage to those living in Zamba This is because in the US, the presence of malaria is pretty uncommon while in Zamba, malaria still runs around. Having the sickle cell trait makes people more resistant to malaria and gives them a genetic advantage if they were to get sick.