Incidence of Cancer

Human cancer data indicates that age and height are two factors that are related to the occurrence of cancer. The figures below show data about cancer incidence for humans based on age and height. (National Cancer Institute; Jiang et al., 2015)

![Figure 1: Rate of cancer diagnosis by age in the United States.](image1)

![Figure 2: Global incidence of cancer and average height for females and males.](image2)

Why Study Cancer in Animals?

To better understand cancer in humans, scientists study cancer in animals. They often use mammals like mice because they are similar in their genetic makeup and the structure and function of their body systems. They also have multiple offspring and grow quickly. These animal models are useful because diseases like...
cancer do not behave the same way in cells in a petri dish as they do in a living system. Scientists have studied cancer in both wild and captive populations of animals of all ages and sizes.

**Large Mammals but Maybe Not More Cancer**

Like many of you, scientists expected that large animals that live very long lives would have higher rates of cancer. They predicted that the biggest, oldest mammals would have the greatest occurrence of cancer. Figure 3 shows scientists’ predictions of the expected risk of colon cancer for bigger, older animals.

The figure above predicts the rate of colon cancer expected in whales that are large and long-lived. When scientists collected data related to the rate of cancer in large, long-lived whales they found that they actually rarely get cancer. The same is true for large, long-lived land mammals such as elephants.

**Protected by p53?**

Scientists wondered what mechanism could be responsible for this puzzling phenomenon. When they investigated the genetics of animals like elephants, they found that they have extra copies of a gene called p53 known to be involved in protecting mammals from getting cancer. While humans have one copy of this gene, elephants have 20. Scientists wondered if the extra copies of p53 could be protecting large, long-lived animals from getting cancer.

**References**

