Problem Solving

1. How does the presence of the pancreas in the control period affect the amount of glucose in the blood?

2. What happened to the amount of blood glucose over four days after the removal of the pancreas? Explain.

3. What effect did the operation have on levels of fatty acids in the blood? Explain why.

4. A buildup of acetoacetic acid can lead to coma and death. When is this likely to occur according to the graph?

5. How might the effects of the operation be counteracted?

Interpreting a Blood Analysis Printout

Suppose that while volunteering at the hospital, you come across a printout that looks like the graph below. You recognize some of the terms on the chart and decide to try to interpret it.

1. What two factors influence blood glucose concentration?

2. Where is glucose converted into glycogen?

3. What triggers the production of glucose-regulating hormones?

4. What kind of feedback control does the transparency show?

5. Describe the source and function of glucagon.

6. Describe the source and function of insulin.

7. Explain why a doctor will request that a person fast for 12 hours before blood is drawn to determine blood glucose concentration.
Much of the work of the digestive system is actually a preparation for the absorption that takes place in the small intestine. In the space provided, explain the mechanical and chemical function of each structure involved in “digestion preparation.” (Some items may have only mechanical or only chemical function.)

1. Mouth

2. Esophagus

3. Stomach

4. Duodenum of the small intestine

5. Pancreas

6. Liver

7. Gallbladder

8. Large intestine

9. Describe a villus in the small intestine.

10. Explain the function of a villus.