Glucose is the primary source of energy for our body cells. Under normal circumstances, our bodies regulate blood glucose through the action of two hormones: insulin and glucagon. These two hormones are synthesized, stored, and secreted by specialized cells in the pancreas. When we eat food that contains carbohydrates, digestion breaks the food down into glucose, causing blood glucose levels to rise. In response to the rise in glucose levels in the bloodstream following a meal, the beta cells of the pancreas release insulin. Glucose cannot cross the cell membranes without the assistance of insulin which travels to the tissues where it stimulates the transport of glucose into the cell. Insulin also stimulates the liver and the muscles to take up glucose to be stored as glycogen, the body's stored form of carbohydrate.

If we haven't eaten for several hours, our blood glucose levels decline. This decrease in blood glucose stimulates the alpha cells of the pancreas to release the hormone glucagon. Glucagon stimulates glycogenolysis, the breakdown of glycogen, to yield glucose. The glucose formed is released into the bloodstream, raising the levels of glucose back to normal. Glucagon also stimulates gluconeogenesis, the process of converting amino acids to glucose. Our well-being and ability to function is dependent on tight regulation of our blood glucose levels.