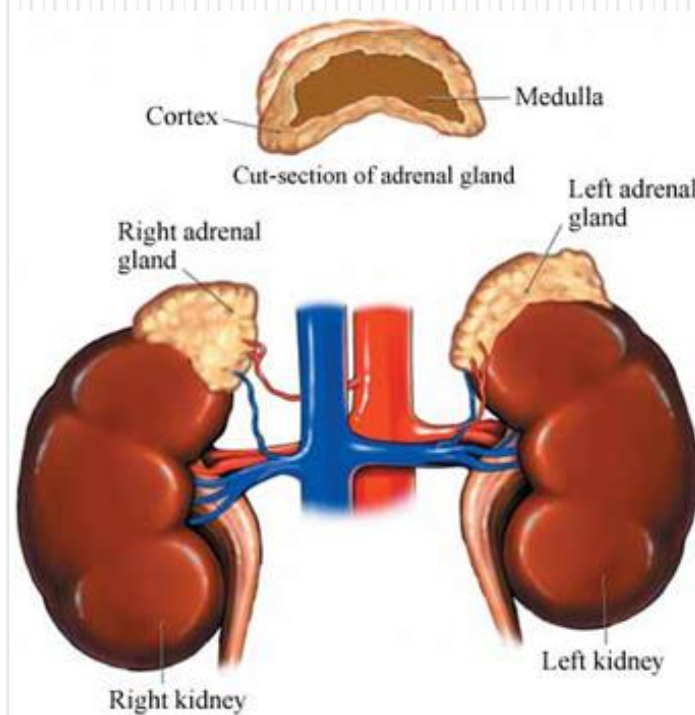
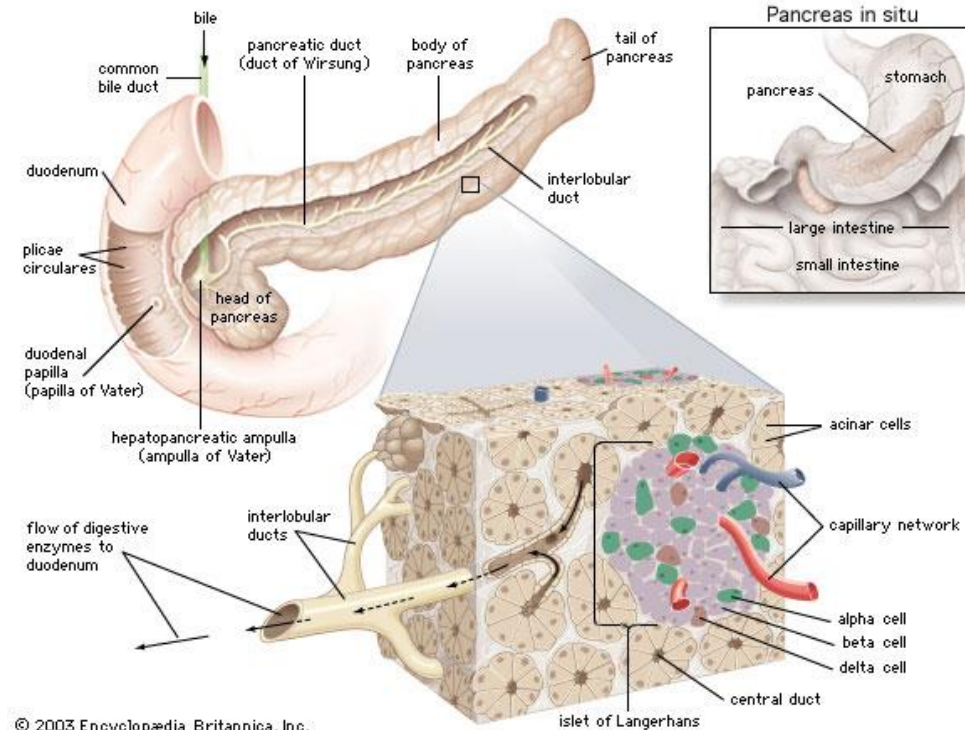
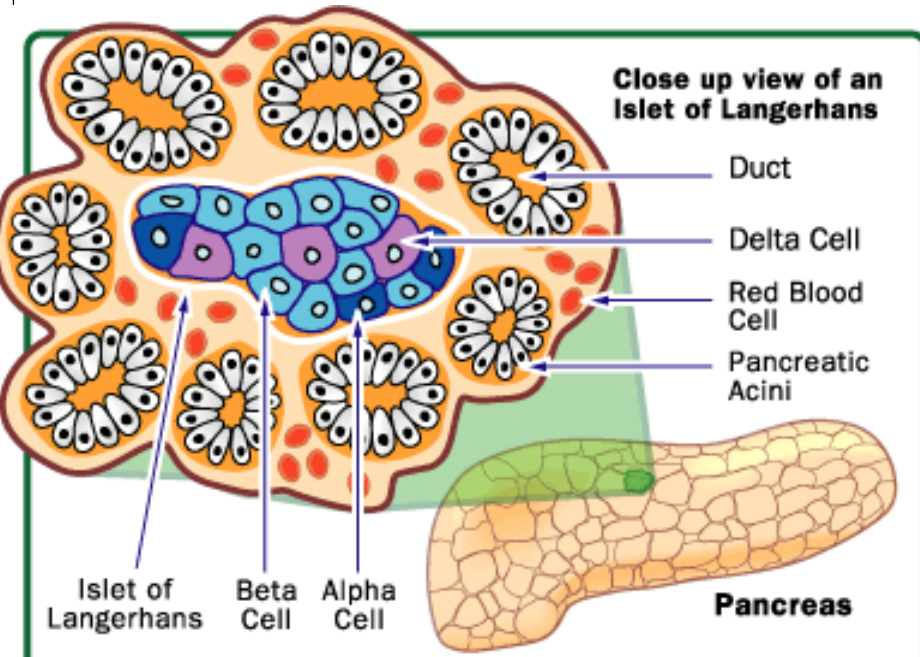


Hormones that Affect Blood Sugar



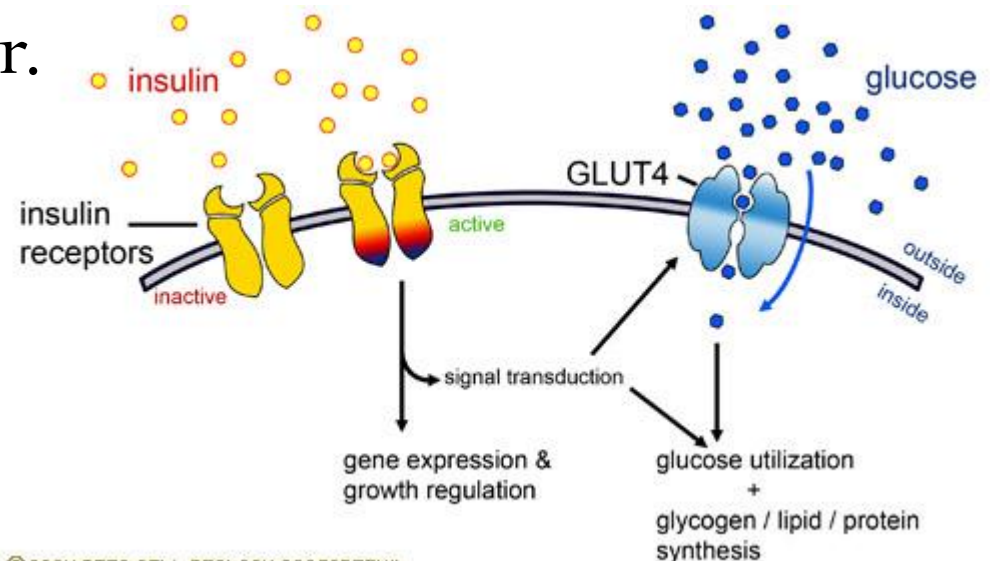
Pancreatic Hormones

- Produced in the islets of Langerhans.
 - Beta (β) cells produce **insulin**.
 - Alpha (α) cells produce **glucagon**.



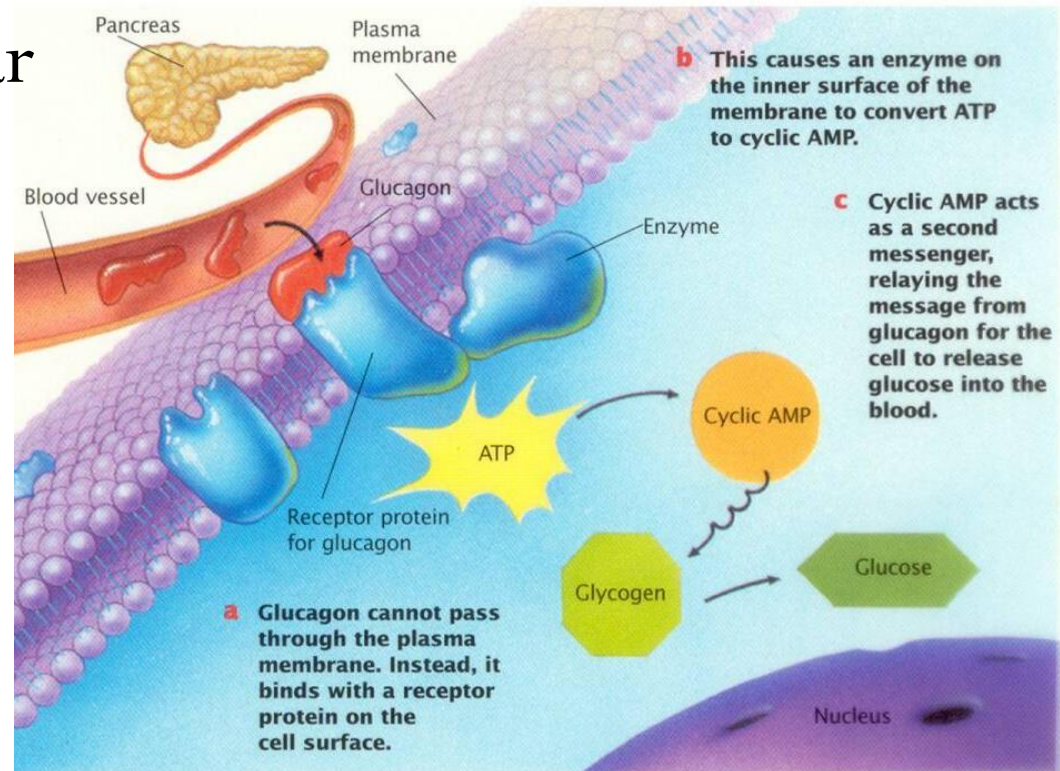
Hormonal Response to **High** Blood Sugar

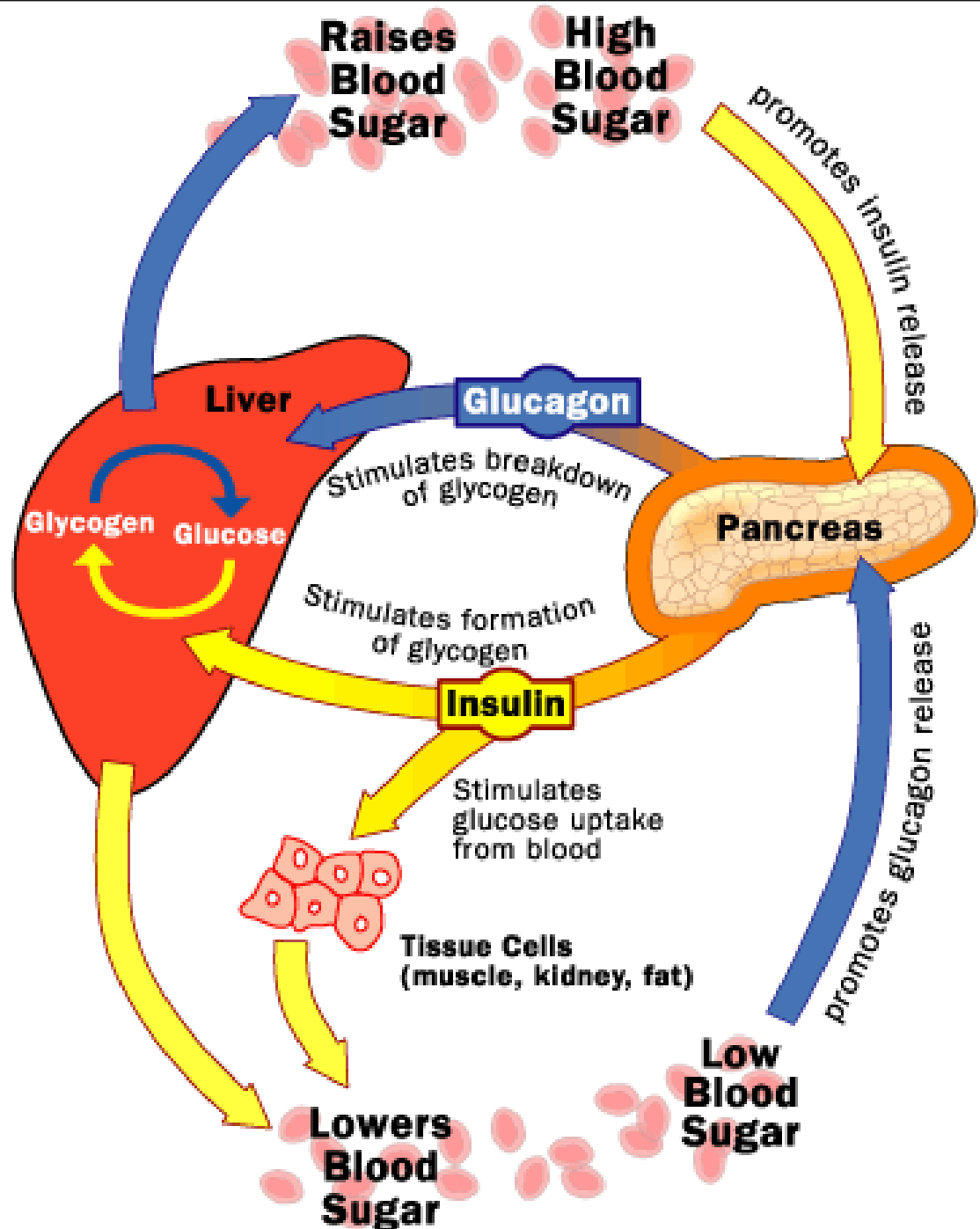
- \uparrow blood sugar = release of **insulin**.
- Causes muscle, liver and other body cells to become permeable to glucose.
- Glucose stored as glycogen or used in cell resp.
- Result = \downarrow blood sugar.



Hormonal Response to **Low** Blood Sugar

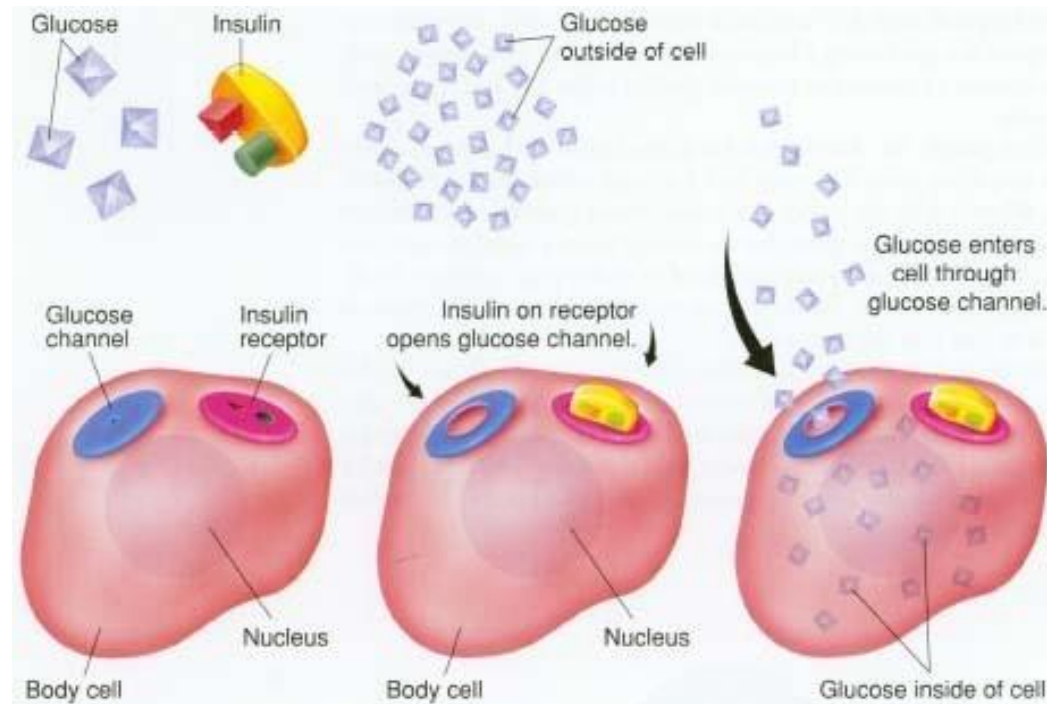
- ↓ blood sugar = release of **glucagon**.
- Promotes breakdown of glycogen into glucose, which is released into the blood.
- Result = ↑ blood sugar





QUESTION 1

What happens when the body does not produce insulin or the receptors no longer responds to insulin?



Diabetes

- Suffer from hyperglycemia (high blood sugar).
- **Type I Diabetes (Insulin Dependent):**
 - Early degradation of beta cells.
 - Unable to produce insulin.
- **Type II Diabetes (Non-Insulin Dependent):**
 - Decreased insulin production or ineffective use of insulin.
 - Controlled with diet, exercise and oral drugs.

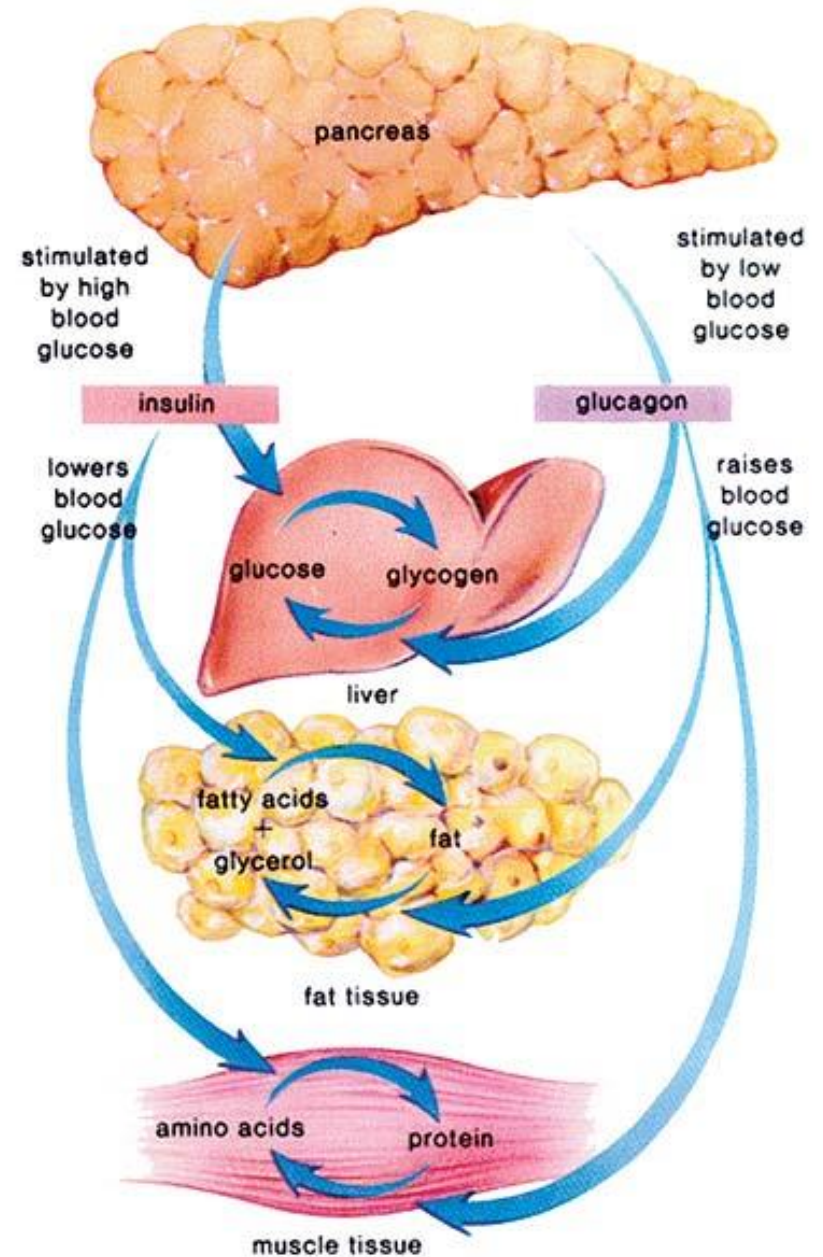
QUESTION 2

If glucose is not taken into body cells, how does the body produce energy?



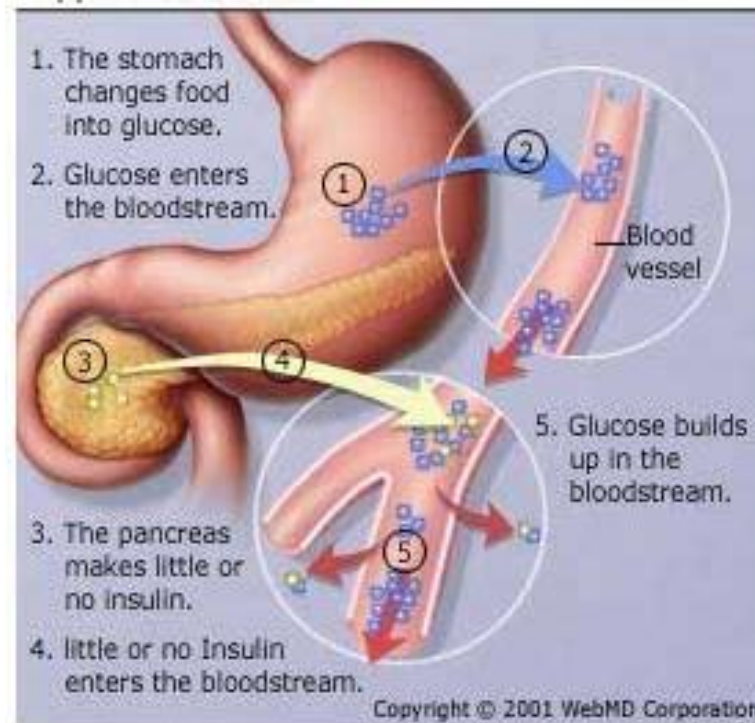
Common in Diabetics

- Absence of insulin means little or no glucose in body cells.
 - Cells metabolize fats and proteins for energy.



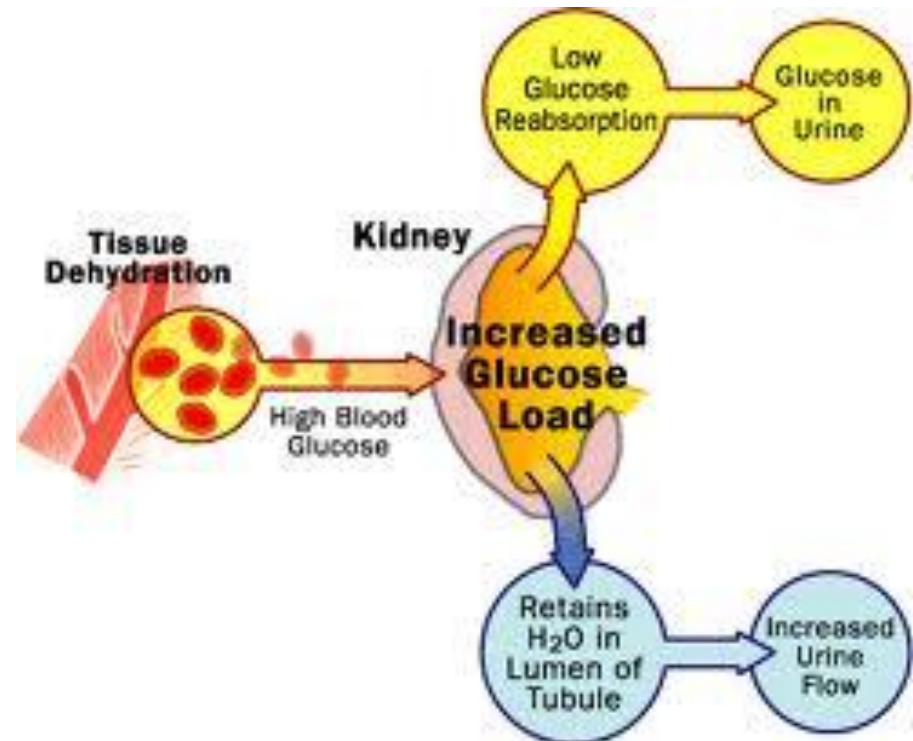
QUESTION 3

With respect to kidney function and water balance, what happens when glucose reabsorption does not occur?



Common in Diabetics

- Kidneys unable to reabsorb all blood glucose, so excess appears in urine.
 - High [glucose] in nephrons draws water out of the plasma.
 - Excessive urination.



Homework

- Study Guide p. 147 # 2-8

