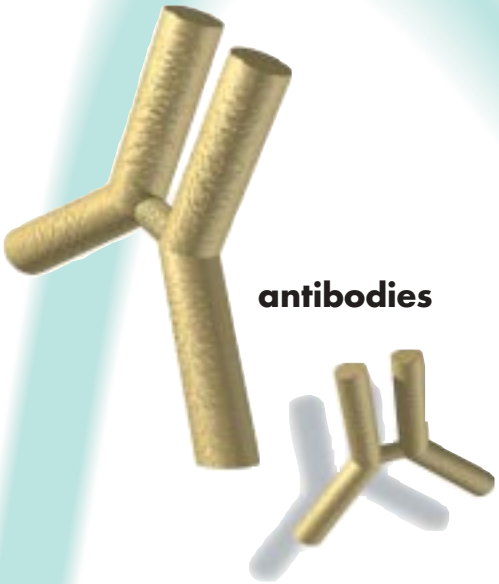
The two types of diabetes



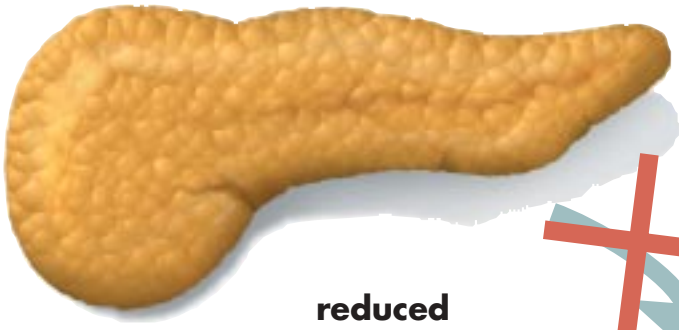
antibodies

Type 1 diabetes

The task of the immune system is to prevent infection or attack. If, for example, a bug enters the body, the immune system produces proteins known as antibodies that destroy it.

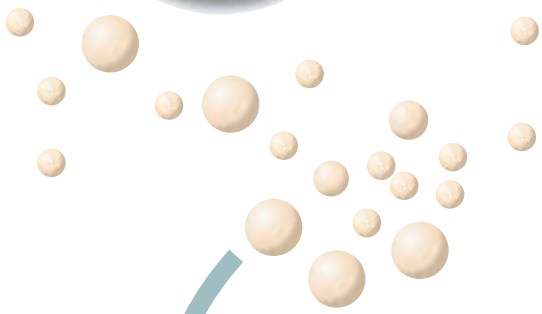
However, sometimes the immune system mounts an attack on the body's own cells. This is known as an autoimmune disease (auto means 'self').

Type 1 diabetes is an autoimmune disease in which the immune system destroys the insulin-producing beta cells in the pancreas.

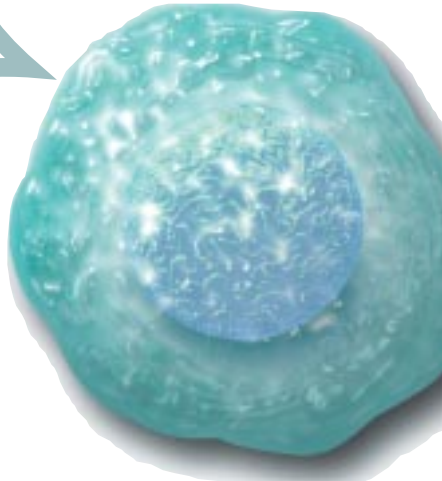


reduced insulin secretion

beta cell



glucose cannot enter cells



Because the beta cells are destroyed, the pancreas is unable to produce enough insulin. This means that glucose cannot enter the cells and glucose in the blood builds up. The body still needs energy, however, and so uses its fat and protein stores as a source of fuel. That is why people with Type 1 diabetes lose weight before they are diagnosed even though they are eating normally.

People with Type 1 diabetes must therefore be given back insulin to survive. Since insulin is destroyed by acid in the stomach, it must be injected.

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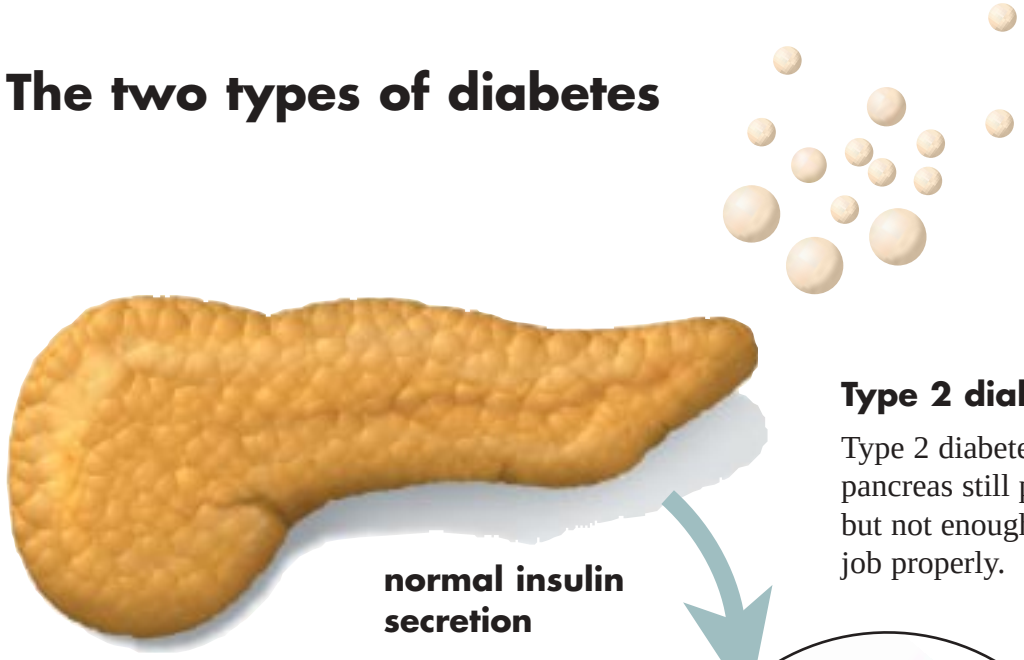
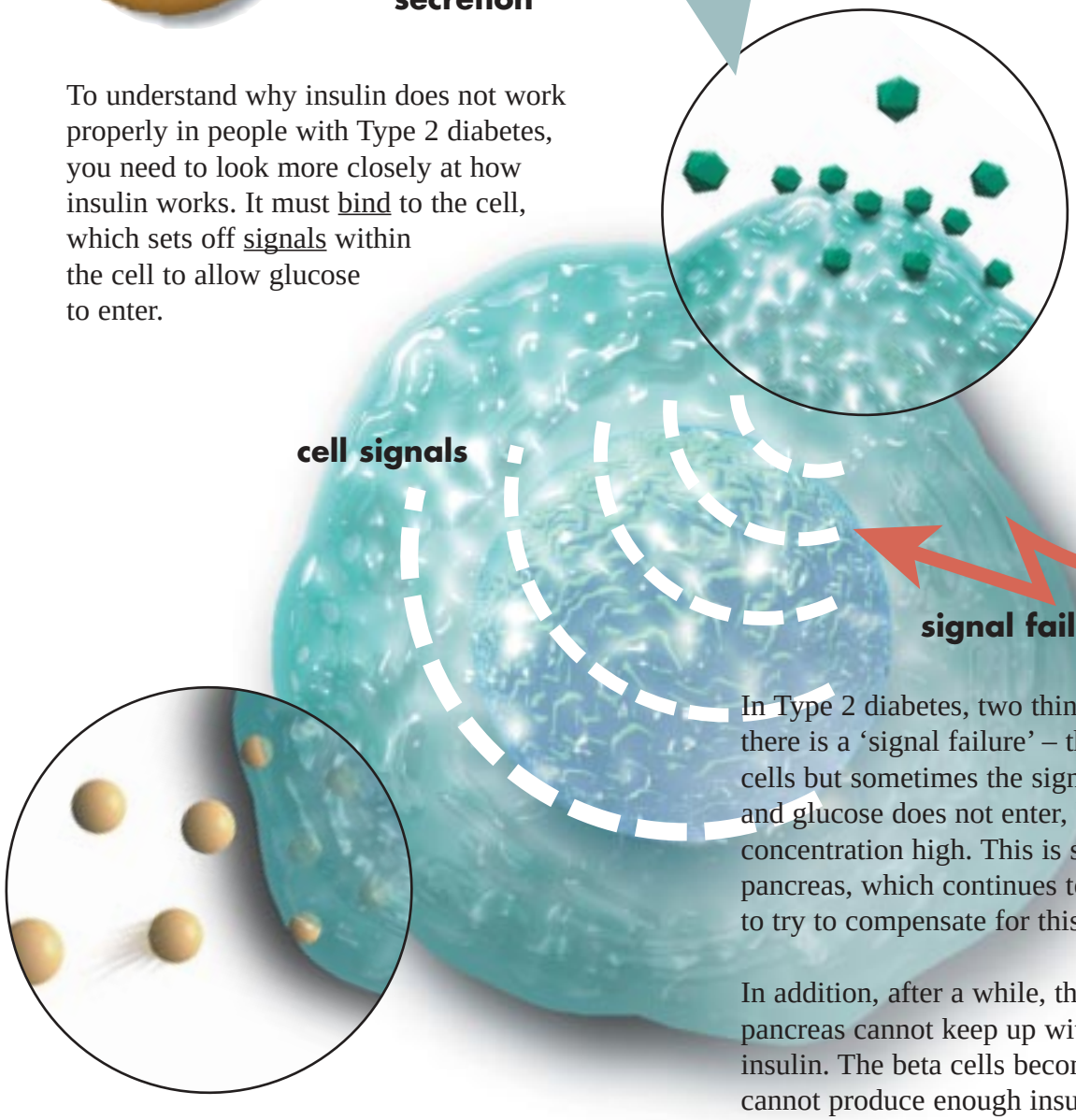


normal insulin secretion

Type 2 diabetes

Type 2 diabetes differs in that the pancreas still produces some insulin, but not enough, and it does not do its job properly.

To understand why insulin does not work properly in people with Type 2 diabetes, you need to look more closely at how insulin works. It must bind to the cell, which sets off signals within the cell to allow glucose to enter.



In Type 2 diabetes, two things go wrong. Firstly, there is a 'signal failure' – the insulin binds to the cells but sometimes the signal is not passed on and glucose does not enter, keeping the blood concentration high. This is sensed by the pancreas, which continues to produce insulin to try to compensate for this failure.

In addition, after a while, the beta cells of the pancreas cannot keep up with this demand for insulin. The beta cells become exhausted and cannot produce enough insulin. What insulin they do produce can be made more effective by increasing the sensitivity of the cells to insulin by diet and certain tablets. Other tablet treatments can boost the ability of the pancreas to produce insulin, but many people with Type 2 diabetes need insulin treatment, often combined with tablets.

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