Causes of diabetes

Type 1 diabetes develops when the body's immune system *NIH external link* destroys the cells in the pancreas that make insulin. These cells are called beta cells. Genes and factors in the environment—the places where people live, play, work, study, and gather—may trigger the immune system to destroy beta cells in type 1 diabetes.

Insulin is a hormone that helps blood glucose get into the body's cells to be used as energy. When your body doesn't have enough insulin, glucose in your blood can't get into the cells. As a result, your cells lack energy, your blood glucose level rises, and you develop diabetes.

Studies such as The Environmental Determinants of Diabetes in the Young (TEDDY) External link are trying to learn more about the causes of type 1 diabetes. Type 1 Diabetes Trial Net External link and other groups are working to find treatments that may prevent or slow the development of type 1 diabetes in people who are at risk for getting the disease.

Type 2 diabetes is the most common form of diabetes. Type 2 diabetes develops when your pancreas doesn't produce enough insulin, and your body has trouble using insulin, a condition called insulin resistance. Insulin resistance is when the cells in your muscles, fat, and liver don't respond well to insulin. When there isn't enough insulin to balance blood glucose levels, they begin to rise.

When blood glucose levels are higher than normal but not high enough to be diagnosed as type 2 diabetes, you have a condition called prediabetes. You have type 2 diabetes when health care professionals diagnose your blood glucose level as being too high.

Researchers don't fully know what causes problems with insulin production and insulin resistance in type 2 diabetes. However, people are more likely to develop type 2 diabetes if they have overweight, obesity, or a large waist size. are age 35 or older. Children and teens can also develop type 2 diabetes, but the risk increases as a person gets older. have a family history of type 2 diabetes.are African American, American Indian, Asian American, Hispanic, Latino, or Pacific Islander.are not physically active, because of a job that requires sitting for long periods of time or because of difficulty moving their body.smoke External link, including tobacco products and e-cigarettes External link, or are exposed to secondhand smoke External link.have prediabetes.have a history of gestational diabetes, a type of diabetes that develops during pregnancy, or gave birth to a baby weighing 9 pounds or more.You can't change some of these risk factors, such as your age, family history, or race. However, you may be able to change some risk factors and prevent or delay type 2 diabetes by maintaining a healthy weight, being physically active, and stopping smoking. Gestational diabetes occurs when your body can't make the extra insulin that you need during pregnancy. Scientists believe that substances made in your body, called hormones, may play a role in causing this form of diabetes.Changes to hormones during pregnancy can make it harder for blood glucose to enter the cells in your body. This ca uses insulin resistance. In most pregnancies, the pancreas can make enough insulin to overcome these changes. If the pancreas can't make enough insulin, you'll develop gestational diabetes.You're more likely to develop gestational diabetes if you have certain risk factors, such as having overweight or obesity gaining too much weight during pregnancy having a family history of gestational diabetes, type 2 diabetes, or bothDiseases caused by changes in your genesGene variants *NIH external link* are changes to certain genes. Some gene variants can cause diseases that can affect the pancreas and lead to diabetes.Monogenic diabetesMonogenic diabetes is a group of rare forms of diabetes caused by a variant, or change,

in a single gene. Parents may pass these gene variants to their children. In some cases,a person may be the first one with the variant in the family. Most forms of monogenic diabetes reduce the amount of insulin your pancreas can make.Cystic fibrosisCystic fibrosis *NIH external link* is a genetic disease that leads to swelling and scarring in the pancreas. This scarring can prevent the pancreas from making enough insulin.Hemochromatos is Hemochromatosis is a genetic condition that causes your body and organs to build up harmful levels of iron *NIH external link*. If the disease is not treated, high levels of iron may damage your pancreas and other organs.Endocrine diseases Some endocrine diseases make the body produce too much of certain hormones. High levels of these hormones may cause insulin resistance or diabetes. Endocrine diseases that may cause insulin resistance or diabetes include Cushing's syndrome, which can cause the body to produce too much cortisol—often called the "stress hormone" acromegaly, which can cause the body to produce too much growth hormone hyperthyroidism, which can cause the body to produce too much thyroid hormone hypothyroidism, which can cause the body to produce too little thyroid hormone Damage to or removal of the pancreasThe pancreas can be damaged by injury or diseases such as inflammation of the pancreas, also called pancreatitis. Diabetes may be the first sign of pancreatic cancer *NIH external link* in older people without diabetes risk factors who develop diabetes. A damaged pancreas may make less insulin and lead to diabetes. In some cases, your pancreas may need to be removed. Without a pancreas, your body can't produce insulin. You'll develop diabetes and will have to take insulin.

To understand diabetes, it's important to understand how the body normally uses glucose.How insulin works.Insulin is a hormone that comes from a gland behind and below the stomach (pancreas).The pancreas releases insulin into the bloodstream.The insulin circulates, letting sugar enter the cells.Insulin lowers the amount of sugar in the bloodstream.As the blood sugar level drops, so does the secretion of insulin from the pancreas.The role of glucose.Glucose — a sugar — is a source of energy for the cells that make up muscles and other tissues.Glucose comes from two major sources: food and the liver.Sugar is absorbed into the bloodstream, where it enters cells with the help of insulin.The liver stores and makes glucose.When glucose levels are low, such as when you haven't eaten in a while, the liver breaks down stored glycogen into glucose. This keeps your glucose level within a typical range.The exact cause of most types of diabetes is unknown. In all cases, sugar builds up in the bloodstream. This is because the pancreas doesn't produce enough insulin. Both type 1 and type 2 diabetes may be caused by a combination of genetic or environmental factors. It is unclear what those factors may be.

Gestational diabetes happens when your body can't make enough insulin during your pregnancy. Insulin is a hormone made by your pancreas. It acts like a key to let blood sugar into the cells in your body for use as energy.During pregnancy, your body makes more hormones and goes through other changes, such as weight gain. These changes cause your body's cells to use insulin less well, a condition called insulin resistance. Insulin resistance increases your body's need for insulin.All pregnant women have some insulin resistance during late pregnancy. However, some women have insulin resistance even before they get pregnant. They start pregnancy with an increased need for insulin and are more likely to develop gestational diabetes.

The different types of diabetes have different causes:Researchers think type 1 diabetes is caused by genes and factors in the environment that might trigger the disease.Type 2 diabetes is caused by several factors, including lifestyle factors and genes. The lifestyle factors include not being physically active and being overweight or having obesity.Researchers think gestational diabetes is caused by the hormonal changes of pregnancy along with genetic and lifestyle factors.