

Cardiovascular Disease

We welcome you to learn about Cardiovascular Health. Here, you can see the artwork inspired by what we have learned, read health plans for those facing cardiovascular disease and listen to first person accounts of living with caring for others with cardiovascular conditions.

Biologically speaking, What happens when you have a cardiovascular condition?

Cardiovascular diseases have a large variety of causes, lifestyle factors such as diet, stress, outside infections, and hereditary factors. When one has Cardiovascular disease, the heart, arteries, veins and capillaries are negatively affected.

There are many genetic variants that contribute to disease and most deal with complex factors such as inflammation, lipid metabolism and blood pressure. In most cases, heart disease includes carotid calcification, plaque, increased levels of lipoproteins and inflammation from C-reactive proteins.

What research is being done into cardiovascular health?

Research is being conducted in so many ways as seen in our researcher interviews. This includes working with stem cells, which can become any cell in the body, inflammation response, genetics and genomics and clinical studies.

Other researchers are studying drug therapies such as use of beta blockers, which target beta receptors in heart cells. The beta receptors lead to stress on the organ, which is stimulated by adrenaline. The beta blockers prevent the binding of the adrenaline and the beta receptors.

What can I do right now to limit my danger of getting a cardiovascular disease?

D.A.S.H. diet (Dietary Approaches to Stop Hypertension) is intended to be a lifelong lifestyle change specially formulated for people who are at a high risk for cardiovascular problems or hypertension. The diet includes specific daily sodium intake requirements depending on the individuals age, height, activity, and genetic background. Low fat and low sodium diets are good for most people. Another thing you want to make sure you do is get 30 minutes of moderate exercise a day and stay away from drinking and smoking. Staying active will keep your heart pumping and your blood flowing, helping the arteries stay unclogged.

Diabetes

We welcome you to learn about Diabetes. Here, you can see the artwork inspired by what we have learned, read about current research, see prevention plans and listen to first person accounts of living with diabetes, or watching other people live with it.

Biologically speaking, what happens when you have diabetes?

Your pancreas produces hormones called insulin. Insulin hormones regulate your blood sugar and helps your cells convert glucose molecules into cell energy. Diabetes causes cells to resist the insulin producing cells, so that glucose builds up in your blood. This can cause long-term problems, including nerve and kidney damage.

The Sulfonylurea Receptor (ABCC8) is a gene found in the beta cells of the pancreas that increases the release of insulin when interacting with a class of drugs named Sulfonylurea. When ABCC8 becomes mutated, the beta cells cannot release insulin. ABCC8 is an important part of ATP-Sensitive potassium channels, or KATP, which are found in the pancreas and are responsible for secretion of insulin by a signal of glucose-metabolism, or ATP. When ABCC8 is mutated, the result can be an increased secretion of insulin. The same holds true for a mutation in the KCNJ11 gene; this can result in changes in secretion of insulin.

What research is currently being done into diabetes?

Diabetes research is highly variable with some people targeting Type 1 and others targeting Type 2. Researchers at Johns Hopkins University are currently working on the prevention or delay of people at risk for Type 1 Diabetes. They have created a system that screens relatives of people with type 1 Diabetes to determine if they are at risk. Relatives of people who carry the disease have a 5% chance of testing positive for autoantibodies that are associated with Type 1 Diabetes. The screening is tested through a blood draw and which is then screened for for three specific autoantibodies: AD 65A, IA-2A and mIAA. These autoantibodies can show results ten years before the Diabetes actually develops. If the results are found positive for any of the three autoantibodies, the patient is offered additional screening.

What can I do right now to limit my danger of getting diabetes?

To prevent a higher risk of being diagnosed with diabetes, you should make sure to maintain a healthy diet that includes enough proteins, lipids, and complex carbohydrates, and keep your weight under control. Unhealthy eating and a sedentary lifestyle increase your risk of acquiring Type 2 Diabetes.

Neurological Diseases

We welcome you to learn about Neurological Health. Here, you can see the artwork inspired by what we have learned about Neurology, read about current research and listen to first person accounts of either living with a neurological disease, or watching other people live with it.

Biologically speaking, what happens when you have a neurological disease?

The nervous system is made up by the brain, spinal cord, and nerves. The nervous system controls all the workings of the body, including moving, speaking, breathing, etc. It can also cause you to have problems with your memory, senses, or mood. Each individual system relies upon the harmonious interplay of the others to ensure the body functions normally. There are 11 systems in the human body. The brain is the connection between all of these systems, so when something goes wrong in the brain, everything can fall apart.

The gene APOE e4 is associated with increased risk for neurological diseases, specifically Alzheimer's disease, while APOE e2 has been associated with decreased risk for neurological diseases. This gene is responsible for providing information for making a protein called apolipoprotein E, where the term APOE is derived from. The APOE e4 gene has been known to result in protein clumps called amyloid plaques that can have negative effects on the brain.

What research is currently being done into neurology?

There are several studies that are currently in the process of understanding select neurological diseases. An understanding of fundamental neurological processes is very important in learning about the development and is also better way of restoring functions that were lost due to neurological diseases. These efforts can include using models to understand possible therapies for neurological diseases by testing devices that can supplement or circumvent impaired neurons. Scientists use cellular biology and 3-D cell and tissue analysis to optimize function of brain implants that treat neurological diseases.

What can I do right now to limit my danger of getting a neurological disease?

One of the best ways to limit your risk of getting a neurological disease is to work out your brain. Any small tasks like painting, cleaning, reading, or playing card games can also help you prevent getting a neurological disease. Exercise and keeping a balanced diet are great ways to keep the brain healthy and disease free.

Cancer

We welcome you to learn about Cancer! Here, you can see the artwork inspired by what we have learned about cancer, read about current research and listen to first person accounts of those living with cancer, or watching other people live with it.

Biologically speaking, what happens when you have cancer?

Normal cells grow, divide, and, before too long, die. This keeps the body working correctly. If the DNA of a cell is mutated or changed, the abnormal cells can occupy other tissues. New cells are made when the body does not need them or old cells don't die when they should. These mutated cancer cells can spread through the blood and lymph systems to other organs. The extra cells form a group of tissue called a growth or tumor.

What research is currently being done into cancer?

Researchers all around the world are looking at Cancer in many different ways. Looking at Cancer using Genomics has led to a new and better understanding of the disease. At Sidney Kimmel Comprehensive Cancer Center are investigating the mutations in the p53 gene, where that mutation has been found in seventy percent of all lung cancer patients. The p53 gene creates a protein, p53, which regulates DNA damage in the cell division cycle.

A Maryland teenager developed a system for detecting cancer. He made was a small piece of paper coated with antibodies specifically designed to recognize different proteins in the blood caused by pancreatic cancer. His new method is 28 times cheaper and 90% effective. However many more years of research are still needed before this new and effective early detection system in public.

What can I do right now to limit my danger of getting cancer?

Restricting how carcinogens contact the body is essential. Radiation, certain chemicals such as from cigarettes and certain viruses contribute to cancer. In addition fat tissues cause the body to create levels of estrogen and insulin that are higher than normal. Estrogen feeds cancerous cells and facilitates cancer growth, while insulin causes cancer cells to grow more quickly. Diets high in vegetables and foods with lots of fiber and antioxidants may help to combat the effects of carcinogens met on a daily basis.