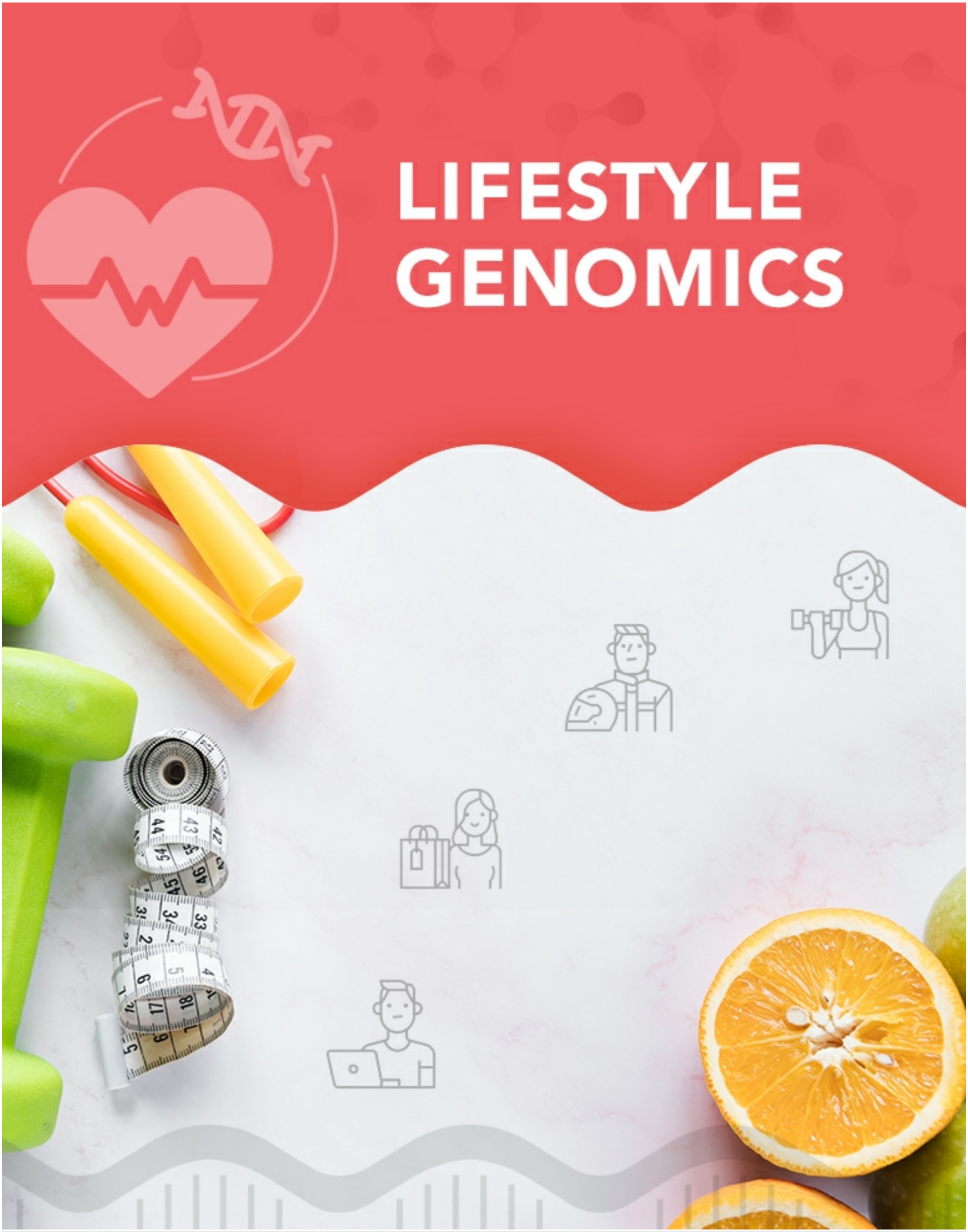

LIFESTYLE
GENOMICS

Category Summary

VASCULAR DISEASES

6.8

Hypertension

Hypertension

What is Hypertension ?

Hypertension is a condition in which the blood pressure is persistently high. Hypertension results from a complex interaction of genes and environmental factors. Lifestyle factors that increase the risk include excess salt in the diet, excess body weight, smoking, and excess alcohol consumption. Unmanaged hypertension can lead to heart attack, stroke, and other health problems.

6.8

Hypertension

Interpretation

According to your genotype, you have a slightly elevated risk of developing Hypertension. People with a slightly elevated risk of hypertension should monitor blood pressure regularly, avoid having tobacco, caffeine and sodium, have a proper balanced diet, and maintain a healthy weight by exercising regularly.

Gene Table

Gene Name: AGT | Your Genotype: CT

The protein encoded by this gene, pre-angiotensinogen or angiotensinogen precursor, is expressed in the liver and is cleaved by the enzyme renin in response to lowered blood pressure. The protein is involved in maintaining blood pressure and in the pathogenesis of essential hypertension and preeclampsia. Mutations in this gene are associated with susceptibility to essential hypertension, and can cause renal tubular dysgenesis, a severe disorder of renal tubular development. Defects in this gene have also been associated with non-familial structural atrial fibrillation, and inflammatory bowel disease.

Gene Name: CYP4A11 | Your Genotype: TT

This gene encodes a member of the cytochrome P450 superfamily of enzymes. The cytochrome P450 proteins are monooxygenases which catalyze many reactions involved in drug metabolism and synthesis of cholesterol, steroids and other lipids. This protein localizes to the endoplasmic reticulum and hydroxylates medium-chain fatty acids such as laurate and myristate.

Gene Name: NOS3

Your Genotype: TT

Nitric oxide is a reactive free radical which acts as a biologic mediator in several processes, including neurotransmission and antimicrobial and antitumoral activities. Nitric oxide is synthesized from L-arginine by nitric oxide synthases. Variations in this gene are associated with susceptibility to coronary spasm. Increased amounts of endothelial NOS (encoded by the NOS3-gene) have been found in preglomerular vessels in diabetic rat glomeruli and NOS-inhibitors has been shown to prevent increase in glomerular filtration rate. This suggests that NO and the NOS enzymes, particularly endothelial NOS, contribute to the glomerular damage leading to nephropathy in diabetic patients.

Do's and Don'ts

Do's

- Eat more fruits, vegetables, and low-fat dairy foods.
- Exercise regularly and get proper sleep.

Don'ts

- Avoid consuming excess of sodium, sweets, sugary drinks, red meats, alcohol, and foods that are high in saturated fat, cholesterol and trans fats.
- Avoid consuming tobacco and other nicotine-containing products.

Category Summary

DIABETES

6.9
Type II Diabetes

4.7
Foot Ulcers

5.5
Cardiovascular Diseases

6.1
Diabetic Retinopathy

5.6
Diabetic Cataract

6.4
Diabetic Nephropathy

5.3
Diabetic Neuropathy

Type II Diabetes

What is Type II Diabetes ?

Diabetes mellitus, commonly known as Type II Diabetes, is a condition that impairs the body's ability to process blood glucose, otherwise known as blood sugar. The hormone insulin moves sugar from the blood into the cells, to be stored or used for energy. With type II diabetes, the body either does not make enough insulin or it cannot effectively use the insulin it does make. Without ongoing, careful management, diabetes can lead to a buildup of sugars in the blood, which can increase the risk of dangerous complications including stroke, heart disease, damage to the eyes, kidneys, and other organs.

6.9

Type II Diabetes

Interpretation

As per your genotype, you have a slightly elevated risk of developing Type II Diabetes. High blood sugar can cause problems with the heart, blood vessels, kidneys, eyes, nerves (can lead to trouble with digestion, sensation in the feet, and sexual responses), wound healing, and pregnancy. People with this genotype should check their blood sugar levels regularly, have a healthy balanced diet, exercise regularly, and take any prescribed medications on time.

Gene Table

Gene Name: TCF7L2 | Your Genotype: AA

This gene encodes a high mobility group (HMG) box-containing transcription factor that plays a key role in the Wnt signaling pathway. The protein has been implicated in blood glucose homeostasis. Genetic variants of this gene are associated with increased risk of type 2 diabetes.

Gene Name: KCNJ11 | Your Genotype: GG

The KCNJ11 gene provides instructions for making parts (subunits) of the ATP-sensitive potassium (K-ATP) channel. Each K-ATP channel consists of eight subunits. Four subunits are produced from the KCNJ11 gene, and four are produced from another gene called ABCC8. K-ATP channels are found in beta cells, which are cells in the pancreas that secrete the hormone insulin. The K-ATP channels are embedded in cell membranes, where they open and close in response to the amount of glucose in the bloodstream. Glucose is a simple sugar and the primary energy source for most cells in the body. Closure of the K-ATP channels in response to increased glucose triggers the release of insulin out of beta cells and into the bloodstream, which helps control blood sugar levels.

Gene Name: FTO | Your Genotype: AA

This gene is a nuclear protein of the AlkB related non-haem iron and 2-oxoglutarate-dependent oxygenase superfamily but the exact physiological function of this gene is not known. Other non-heme iron enzymes function to reverse alkylated Diabetic nephropathyA and RNA damage by oxidative demethylation. Studies in mice and humans indicate a role in nervous and cardiovascular systems and a strong association with body mass index, obesity risk, and type 2 diabetes.

Gene Name: SLC2A4 | Your Genotype: CT

This gene is a member of the solute carrier family 2 (facilitated glucose transporter) family and encodes a protein that functions as an insulin-regulated facilitative glucose transporter. In the absence of insulin, this integral membrane protein is sequestered within the cells of muscle and adipose tissue. Within minutes of insulin stimulation, the protein moves to the cell surface and begins to transport glucose across the cell membrane. Mutations in this gene have been associated with noninsulin-dependent diabetes mellitus.

Gene Name: IRS1 | Your Genotype: GG

Insulin receptor substrate 1 is a substrate of insulin receptor tyrosine kinase, which plays a central role in the insulin-stimulated signal transduction pathway, and acts as a docking protein between the insulin receptor and the signalling molecules.

Gene Name: CAPN10 | Your Genotype: GA

CAPN10 gene encodes the protein calpain-10, which is a member of the cysteine protease family that is involved in proinsulin processing, insulin secretion, and insulin resistance

Gene Name: ADIPOQ | Your Genotype: GT

This gene is expressed in adipose tissue exclusively. It encodes a protein with similarity to collagens X and VIII and complement factor C1q. The encoded protein circulates in the plasma and is involved with metabolic and hormonal processes. Mutations in this gene are associated with adiponectin deficiency. Adiponectin has an important role in regulating insulin sensitivity and energy homeostasis. Adiponectin is an adipokine with insulin-sensitizing properties and its level in serum is reduced in type 2 diabetes. Adiponectin has a wide range of anti-atherogenic effects. A genetic deficit of this protein could increase the risk of CAD in both general population and patients with type 2 diabetes.

Gene Name: WFS1 | Your Genotype: GG

WFS1 encodes wolframin, a transmembrane glycoprotein that maintains calcium homeostasis of the endoplasmic reticulum. Mutations in this gene causes Wolfram syndrome, characterized by diabetes insipidus, juvenile-onset non-autoimmune diabetes mellitus, optic atrophy and deafness.

Gene Name: CDKAL1 | Your Genotype: AG

CDKAL1 gene encode tRNA decoration enzyme, namely methyl transfer enzyme which is responsible for the 2-methylthio-N6-threonylcarbamoyladenosine synthesis of the 37th base of tRNA Lys(UUU). Wei et al found the mitochondria adenosine triphosphate (ATP) generation obstacle and the first stage insulin secretion impairment in the CDKAL1 gene knock-out mice.

Gene Name: CDKN2A/B | Your Genotype: TT

CDKN2A and CDKN2B are adjacent Cyclin dependent kinase inhibitor genes on chromosome 9p. CDKN2A and CDKN2B encode p16INK4a and p15INK4b respectively. p16INK4a inhibits CDK4, a powerful regulator of pancreatic beta cell replication. In mice, CDKN2A over-expression leads to islet hypoplasia and diabetes .

Gene Name: KCNQ1 | Your Genotype: AA

The KCNQ1 gene encodes the pore-forming A-subunit of the voltage-gated K+ channel (KvLQT1), which plays an important role in controlling the ventricular repolarization process. KCNQ1 (potassium voltage-gated channel, KQT-like subfamily, member 1) gene as a novel gene for susceptibility to type 2 diabetes. KCNQ1 encodes the pore-forming ? subunit of the voltage-gated potassium channel expressed mainly in the heart. The expression of KCNQ1 could also be observed in the human kidney. In the kidney, KCNQ1 has been shown to assemble with KCNE1, the ? subunit of the potassium channel, forming a potassium channel complex localized to the brush border of the mid to late proximal tubule (11,12); moreover, it has been shown to play a role in the Na+ secretion at the proximal tubule by maintaining a driving force for Na+ transport across the membrane

Do's and Don'ts

Do's

- Take any prescribed medications and insulin on time, as per your physician's advice, if diagnosed with type II diabetes.
- Check blood sugar levels regularly. Undergo regular check ups with your physician to check for early signs of diabetes.
- Engage in physical activities on a regular basis.
- Eat a healthy and balanced diet, and at regular intervals.
- Get proper sleep.

Don'ts

- Avoid smoking, consuming highly processed carbohydrates, sugary drinks, trans fats, saturated fats, red meats, and processed meats.

Foot Ulcers

What is Foot Ulcers ?

Certain degrees of nerve damage often lead to ineffective repairing of damaged skin, which under ideal circumstances would heal normally. The impaired healing process can be attributed to high or regularly fluctuating levels of blood sugar in diabetic conditions. Therefore, in such a condition even a mild injury can cause a foot ulcer.

4.7

Foot Ulcers

Interpretation

As per your genotype, you have a typical risk of developing Diabetic Foot Ulcers. Maintaining proper blood glucose levels and foot hygiene is essential to prevent foot ulcers.

Gene Table

Gene Name: SDF1 | Your Genotype: GG

Single nucleotide polymorphisms (SNPs) in inflammatory genes serve as valuable candidates for DFU since the pro-inflammatory cytokines interleukin-6 (IL-6) and tumor necrosis factor-alpha (TNF-?) and the chemokine stromal cell-derived factor (SDF-1/CXCL12) have been shown to coordinate the three phases of wound healing.

Gene Name: MMP9 | Your Genotype: CC

Matrix metalloproteinases (MMPs) are important proteolytic enzymes that are involved in connective tissue remodeling and in degradation of extracellular matrix. Proteins of the matrix metalloproteinase (MMP) family are involved in the breakdown of extracellular matrix in normal physiological processes, such as embryonic development, reproduction, and tissue remodeling, as well as in disease processes, such as arthritis and metastasis. Most MMP's are secreted as inactive proproteins which are activated when cleaved by extracellular proteinases. The enzyme encoded by this gene degrades type IV and V collagens. Studies in rhesus monkeys suggest that the enzyme is involved in IL-8-induced mobilization of hematopoietic progenitor cells from bone marrow, and murine studies suggest a role in tumor-associated tissue remodeling.

Gene Name: Near TNF | Your Genotype: GG

Gene Name: VEGFA | Your Genotype: CA

This gene is a member of the PDGF/VEGF growth factor family. It encodes a heparin-binding protein, which exists as a disulfide-linked homodimer. This growth factor induces proliferation and migration of vascular endothelial cells, and is essential for both physiological and pathological angiogenesis. Diabetic microvascular changes in the retina lead to hypoxia, which stimulates production of VEGF, a multifunctional cytokine that promotes angiogenesis and is a potent mediator of microvascular permeability. 17 VEGF is believed to play a significant role in the development of DR by inducing hyperpermeability of retinal vessels, breakdown of the bloodÐretinal barrier and neovascularization.

Gene Name: TNFRSF11B | Your Genotype: GC

The protein encoded by this gene is a member of the TNF-receptor superfamily. This protein is an osteoblast-secreted decoy receptor that functions as a negative regulator of bone resorption. This protein specifically binds to its ligand, osteoprotegerin ligand, both of which are key extracellular regulators of osteoclast development. Local inflammation is associated with the release of proinflammatory cytokines such as interleukin (IL)-1alpha and tumor necrosis factor (TNF)-alpha, which are known mediators of bone resorption via excess osteoclastic activity. These cytokines lead to an increased expression of the receptor activator of nuclear factor-kB (RANK) ligand (RANK-L). Its receptor (RANK) is expressed in the membrane of preosteoclasts. RANK-L stimulates the expression of nuclear factor (NF)-kB that, in turn, induces the maturation of precursor cells into mature osteoclasts. At the same time, NF-kB induces the glycoprotein osteoprotegerin (OPG), which acts as a decoy receptor for RANK-L to avoid excess osteolysis.

Gene Name: Near TLR4 | Your Genotype: AA

TLR4 plays an important role in wound healing and any sort of imbalance in TLR4 mediated signaling may abrogate the proper wound healing cascade. a cytoskeletal protein Flightless I modulate wound inflammation, angiogenesis, and remodeling which act via TLR4-MyD88 signaling pathway. TLR4 is an important member of the TLR family, and its expression has been reported on a variety of cell types, including cardiomyocytes, macrophages, airway epithelium, endothelial, and smooth muscle cells [13]. TLR4 as a PRR has been shown to predominantly interact with microorganism-derived lipopolysaccharides, but other interacting molecules, such as heat shock proteins 60 and 70, ?brinogen, and ?bronectin, are also known [14]. After ligand binding, TLR4 takes part in the activation of a pro-inflammatory response by the activation of the nuclear factor-?B pathway. Any deregulation of TLR4 signaling due to the single nucleotide polymorphisms (SNPs) in the extracellular domain of TLR4 may alter the ligand binding capacity and hence disturb the pro- and anti-inflammatory cytokines.

Gene Name: TLR4 | Your Genotype: TT

TLR4 plays an important role in wound healing and any sort of imbalance in TLR4 mediated signaling may abrogate the proper wound healing cascade. a cytoskeletal protein Flightless I modulate wound inflammation, angiogenesis, and remodeling which act via TLR4-MyD88 signaling pathway. Our group has recently shown that differential expression of TLR4 in human diabetic wounds leads to impairment in wound healing cascade and finally into chronic nonhealing ulcers. Deregulation of the TLR4 signaling due to the single nucleotide polymorphisms (SNPs) in the extracellular domain of TLR4 may alter the ligand binding capacity.

Do's and Don'ts

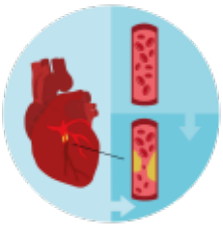
Do's

- Keep your foot clean and dry.
- Use diabetic shoes, casts, foot braces, compression wraps, and shoe inserts to prevent corns and calluses, if you suffer from diabetes or as adviced by your physician.

Don'ts

- Avoid consumption of tobacco as it inhibits blood circulation.
- Avoid wearing shoes with improper fitting.

Cardiovascular Diseases



What is Cardiovascular Diseases ?

Cardiovascular Diseases' is a general term used to refer to conditions affecting the heart or blood vessels. It can also be associated with damage to the arteries in organs such as the brain, heart, kidneys, and eyes.

5.5

Cardiovascular Diseases

Interpretation

As per your genotype, you have a typical risk of developing Cardiovascular Diseases. However, obesity and lack of physical activity may elevate the risk.

Gene Table

Gene Name: ADIPOQ | Your Genotype: GT

This gene is expressed in adipose tissue exclusively. It encodes a protein with similarity to collagens X and VIII and complement factor C1q. The encoded protein circulates in the plasma and is involved with metabolic and hormonal processes. Mutations in this gene are associated with adiponectin deficiency.

Gene Name: PON1 | Your Genotype: TT

This gene encodes a member of the paraoxonase family of enzymes and exhibits lactonase and ester hydrolase activity. Following synthesis in the kidney and liver, the enzyme is secreted into the circulation, where it binds to high density lipoprotein (HDL) particles and hydrolyzes thiolactones and xenobiotics, including paraoxon, a metabolite of the insecticide parathion. Polymorphisms in this gene may be associated with coronary artery disease and diabetic retinopathy.

Gene Name: OPG

Your Genotype: TC

The protein encoded by this gene is a member of the TNF-receptor superfamily. This protein is an osteoblast-secreted decoy receptor that functions as a negative regulator of bone resorption. This protein specifically binds to its ligand, osteoprotegerin ligand, both of which are key extracellular regulators of osteoclast development. Local inflammation is associated with the release of proinflammatory cytokines such as interleukin (IL)-1alpha and tumor necrosis factor (TNF)-alpha, which are known mediators of bone resorption via excess osteoclastic activity. These cytokines lead to an increased expression of the receptor activator of nuclear factor-kB (RANK) ligand (RANK-L). Its receptor (RANK) is expressed in the membrane of preosteoclasts. RANK-L stimulates the expression of nuclear factor (NF)-kB that, in turn, induces the maturation of precursor cells into mature osteoclasts. At the same time, NF-kB induces the glycoprotein osteoprotegerin (OPG), which acts as a decoy receptor for RANK-L to avoid excess osteolysis.

Do's and Don'ts

Do's

- Aim to engage in physical activity for at least 30 minutes every day.
- Eat five servings of fruits and vegetables in a day.
- Monitor your salt intake.

Don'ts

- Avoid physical inactivity, and consumption of tobacco and alcohol.
- Avoid eating junk foods and foods with high fat content.

Diabetic Retinopathy

What is Diabetic Retinopathy ?

Diabetic Retinopathy is a diabetic complication that affects the eyes. It is caused by damage to the blood vessels in the tissue at the back of the eye (retina) due to high blood sugar levels. These blood vessels can swell and leak or they can close, stopping blood from passing through. Sometimes, abnormal new blood vessels grow on the surface of the retina.

6.1

Diabetic Retinopathy

Interpretation

As per your genotype, you have a slightly elevated risk of developing Diabetic Retinopathy. Diabetic retinopathy involves the abnormal growth of blood vessels in the retina. Complications can lead to serious vision problems like retinal detachment, glaucoma, and blindness. Consult your doctor for regular eye check ups. Check your blood sugar levels, cholesterol levels, and blood pressure regularly. Take prescribed diabetes medication regularly, as per your physician's advice.

Gene Table

Gene Name: RXRG

Your Genotype: AG

The retinoid-X receptor (RXR) is one of the members of the nuclear hormone receptor superfamily. It forms heterodimers with many nuclear receptors, such as the peroxisome proliferative-activated receptor (PPAR), and mediates the biological effects of several hormones and drugs. PPAR alpha and PPAR gamma are involved in the regulation of lipid and glucose metabolism, and have an important impact on the development of diabetic microvascular complications, which include nephropathy and retinopathy.

Gene Name: CFH | Your Genotype: GA

The CFH gene provides instructions for making a protein called complement factor H. This protein helps regulate a part of the body's immune response known as the complement system. The complement system is a group of proteins that work together to destroy foreign invaders (such as bacteria and viruses), trigger an inflammatory response, and remove debris from cells and tissues. This system must be carefully regulated so it targets only unwanted materials and does not damage the body's healthy cells. Complement factor H, together with several related proteins, protects healthy cells by preventing the complement system from being turned on (activated) when it is not needed.

Gene Name: IL10 | Your Genotype: AA

The protein encoded by this gene is a cytokine produced primarily by monocytes and to a lesser extent by lymphocytes. This cytokine has pleiotropic effects in immunoregulation and inflammation. It down-regulates the expression of Th1 cytokines, MHC class II Ags, and costimulatory molecules on macrophages. It also enhances B cell survival, proliferation, and antibody production. This cytokine can block NF-kappa B activity, and is involved in the regulation of the JAK-STAT signaling pathway. Increased expression of IL-10 by pro-angiogenic M2 macrophage may influence the retinal microangiopathy of diabetic subjects. Interleukin-10 (IL-10) is a pleiotropic anti-inflammatory cytokine expressed by most cells of the adaptive and innate immune systems, including leukocytes, dendritic cells, andmacrophages. IL-10 can inhibit the production of pro-inflammatory cytokines, antigen presentation, and proliferation of T cells. On the other hand, IL-10 can stimulate differentiation, proliferation, and survival of certain immune cells, such as B cells. The levels of IL-10 show a high intra- and interindividual variability among healthy individuals.

Gene Name: TCF7L2 | Your Genotype: CC

This gene encodes a high mobility group (HMG) box-containing transcription factor that plays a key role in the Wnt signaling pathway. The protein has been implicated in blood glucose homeostasis. Genetic variants of this gene are associated with increased risk of type 2 diabetes.

Gene Name: UCP2 | Your Genotype: GG

The uncoupling protein 2 (UCP2) is a member of the mitochondrial inner membrane carrier family and is expressed in many tissues including white adipose tissue, liver, kidney, pancreatic islets, macrophages and retinal endothelial cells and pericytes. UCP2 uncouples the substrate oxidation from the ATP synthesis, dissipating the membrane potential energy and consequently decreasing ATP production by the mitochondrial respiratory chain. The uncoupling thus leads to tissue-specific functions such as decreasing ROS formation by mitochondria, regulation of free fatty acids metabolism and inhibition of insulin secretion from beta cells. Oxidative damage due to hyperglycemia is reported to be one of the major factors contributing to the development of DPN. The main source of reactive oxygen species (ROS) in diabetes is thought to be the mitochondria. Uncoupling proteins (UCPs) can provide a controlled leak of protons across the inner membrane of the mitochondria and thus uncouple oxidative phosphorylation from respiration, with a concomitant decrease in inner mitochondrial membrane potential and free radical generation. The mitochondrial UCP families, particularly UCP2, which is expressed in various human tissues, are thought to contribute to control of body temperature and energy metabolism as well as to regulation of mitochondrial production of ROS. Therefore, the UCP2 gene is considered to be involved in DPN.

Gene Name: IFNG | Your Genotype: TT

Interferon G (IFN-G) generated by phagocytic cells upon cellular activation are also known to be angiogenic, fibrogenic, and vasculoreactive. IFN-G is expressed at high levels in ocular tissues among patients with peripheral diabetic retinopathy and is considered an indirect inducer of angiogenesis through the activation of VEGF (vascular endothelial growth factor)

Gene Name: ACE | Your Genotype: AA

The rennin-angiotensin system (RAS) has been implicated in the development of DR, and inhibition the activity of RAS has shown to retard the DR. ACE is a dipeptidyl carboxypeptidase I (EC.3.4.15.1) that activates angiotensin I through cleavage of the carboxyterminal dipeptide into the potent vasoconstrictor angiotensin II and inactivates the vasodilator peptide bradykinin. Published data have shown that ACE is produced locally by vascular endothelial cells and retinal pigment epithelial cells. Elevated ACE expression has been shown to have adverse effects on retinal blood flow and vascular structure, independent of systemic blood pressure levels.

Gene Name: Near CCL2 | Your Genotype: AA

Hyperglycemia accelerates MCP1 production in vascular endothelial cells and retinal pigmented epithelial cells. Moreover, the levels of MCP1 in aqueous and vitreous conditions were significantly increased in patients with diabetic retinopathy. production may lead to neovascularization and permeability of retinal vessels, which is the cause of proliferative diabetic retinopaty (PDR)

Gene Name: CD54 (ICAM-1) Your Genotype: AG

Intercellular adhesion molecule-1 (ICAM-1) is a biomarker for endothelial cell dysfunction and inflammation that mediates leucocyte influx and persistent retinal leukostasis, retinal vascular leakage, capillary non-perfusion and endothelial cell injury and death subsequently resulting from Fas/FasL-mediated apoptosis.6 Its levels are upregulated along with the integrin ligands in patients with DR and retina of animal models.6 A decrease in the adherent retinal leucocytes have also been observed in ICAM-1 knock out animal models5 demonstrating the role of ICAM-1-mediated inflammation in DR pathogenesis.

Gene Name: TGFB1 Your Genotype: CC

This gene encodes a secreted ligand of the TGF-beta (transforming growth factor-beta) superfamily of proteins. Ligands of this family bind various TGF-beta receptors leading to recruitment and activation of SMAD family transcription factors that regulate gene expression. The encoded preproprotein is proteolytically processed to generate a latency-associated peptide (LAP) and a mature peptide, and is found in either a latent form composed of a mature peptide homodimer, a LAP homodimer, and a latent TGF-beta binding protein, or in an active form consisting solely of the mature peptide homodimer. The mature peptide may also form heterodimers with other TGFB family members. This encoded protein regulates cell proliferation, differentiation and growth, and can modulate expression and activation of other growth factors including interferon gamma and tumor necrosis factor alpha. This gene is frequently upregulated in tumor cells, and mutations in this gene result in Camurati-Engelmann disease. TGF-b1 and cytokines, particularly interleukins and tumor necrosis factors (TNFs), may act as local amplification signals in pathological processes associated with chronic eye inflammation. plays an important role by stimulating angiogenesis and inhibiting the endothelial function in the eye. The local activation of TGF-b1 expression may thus play an important role in the development of the proliferative phase of diabetic retinopathy

Gene Name: PPARG Your Genotype: CC

This gene encodes a member of the peroxisome proliferator-activated receptor (PPAR) subfamily of nuclear receptors. PPARs form heterodimers with retinoid X receptors (RXRs) and these heterodimers regulate transcription of various genes. Three subtypes of PPARs are known: PPAR-alpha, PPAR-delta, and PPAR-gamma. The protein encoded by this gene is PPAR-gamma and is a regulator of adipocyte differentiation. PPAR-G2 is a nuclear receptor that serves important roles in intermediate metabolism. PPAR gamma (PPARG) nuclear receptor, which is mainly expressed in adipose tissue but is also found in pancreatic beta cells, vascular endothelium, and macrophage. PPARg, a member of the nuclear hormone receptor superfamily of ligand-activated transcription factors, plays a key role in regulating the expression of numerous genes involved in lipid metabolism, metabolic syndrome, inflammation. Additionally, PPAR-gamma has been implicated in the pathology of numerous diseases including obesity, diabetes, atherosclerosis and cancer.

Gene Name: ADIPOQ | Your Genotype: TT

This gene is expressed in adipose tissue exclusively. It encodes a protein with similarity to collagens X and VIII and complement factor C1q. The encoded protein circulates in the plasma and is involved with metabolic and hormonal processes. Mutations in this gene are associated with adiponectin deficiency. Adiponectin (ADIPOQ), which regulates inflammation. Chronic inflammation inhibits the production of adiponectin, an anti-inflammatory cytokine, by increasing the levels of pro-inflammatory cytokine like TNF-. This imbalance in the levels of cytokines further plays a key role in insulin resistance, hyperglycaemia, oxidative stress, endothelial dysfunction and T2D

Gene Name: Near UCP1 | Your Genotype: GG

UCP1 plays a recognized role in protection against oxidative stress, which is one of the major contributors to accelerated loss of retinal capillary cell in diabetes

Gene Name: CFB | Your Genotype: GG

This gene encodes complement factor B, a component of the alternative pathway of complement activation. Factor B circulates in the blood as a single chain polypeptide. Upon activation of the alternative pathway, it is cleaved by complement factor D yielding the noncatalytic chain Ba and the catalytic subunit Bb. The active subunit Bb is a serine protease which associates with C3b to form the alternative pathway C3 convertase. Bb is involved in the proliferation of preactivated B lymphocytes, while Ba inhibits their proliferation. This gene localizes to the major histocompatibility complex (MHC) class III region on chromosome 6. This cluster includes several genes involved in regulation of the immune reaction.

Gene Name: RAGE | Your Genotype: GG

RAGE gene polymorphisms are attractive candidates to influence DR because of pathophysiological data correlating retinopathy and advanced glycation end products (AGEs). AGEs result from the non-enzymatic glycation of proteins and lipids. They are found at increased levels in diabetes and can lead to increased oxidative stress and receptor-mediated activation and secretion of various cytokines. Accumulation of AGEs has been suggested to contribute to vasculopathy by increasing retinal endothelial cell permeability. A Gly82Ser polymorphism in RAGE is potentially interesting since it occurs at a predicted N-linked glycosylation motif in the AGE binding site, thereby influencing AGE-RAGE interactions

Gene Name: VEGFA | Your Genotype: AA

This gene is a member of the PDGF/VEGF growth factor family. It encodes a heparin-binding protein, which exists as a disulfide-linked homodimer. This growth factor induces proliferation and migration of vascular endothelial cells, and is essential for both physiological and pathological angiogenesis. Diabetic microvascular changes in the retina lead to hypoxia, which stimulates production of VEGF, a multifunctional cytokine that promotes angiogenesis and is a potent mediator of microvascular permeability. 17 VEGF is believed to play a significant role in the development of DR by inducing hyperpermeability of retinal vessels, breakdown of the bloodÐretinal barrier and neovascularization

Gene Name: EPO | Your Genotype: TT

This gene encodes a secreted, glycosylated cytokine composed of four alpha helical bundles. The encoded protein is mainly synthesized in the kidney, secreted into the blood plasma, and binds to the erythropoietin receptor to promote red blood cell production, or erythropoiesis, in the bone marrow. Expression of this gene is upregulated under hypoxic conditions, in turn leading to increased erythropoiesis and enhanced oxygen-carrying capacity of the blood. Expression of this gene has also been observed in brain and in the eye, and elevated expression levels have been observed in diabetic retinopathy and ocular hypertension. Recombinant forms of the encoded protein exhibit neuroprotective activity against a variety of potential brain injuries, as well as antiapoptotic functions in several tissue types, and have been used in the treatment of anemia and to enhance the efficacy of cancer therapies. EPO was a glycoprotein which plays a major role in stimulation of bone marrow stem cells and erythropoiesis. The expression of EPO receptors in the retina and vascular endothelial cells

Gene Name: Near EPO | Your Genotype: AA

This gene encodes a secreted, glycosylated cytokine composed of four alpha helical bundles. The encoded protein is mainly synthesized in the kidney, secreted into the blood plasma, and binds to the erythropoietin receptor to promote red blood cell production, or erythropoiesis, in the bone marrow. Expression of this gene is upregulated under hypoxic conditions, in turn leading to increased erythropoiesis and enhanced oxygen-carrying capacity of the blood. Expression of this gene has also been observed in brain and in the eye, and elevated expression levels have been observed in diabetic retinopathy and ocular hypertension. Recombinant forms of the encoded protein exhibit neuroprotective activity against a variety of potential brain injuries, as well as antiapoptotic functions in several tissue types, and have been used in the treatment of anemia and to enhance the efficacy of cancer therapies. EPO was a glycoprotein which plays a major role in stimulation of bone marrow stem cells and erythropoiesis. The expression of EPO receptors in the retina and vascular endothelial cells

Gene Name: ALR2 | Your Genotype: CC

AR, the first enzyme of the polyol pathway, probably plays an important role in the pathogenesis of the long-term complications of diabetes by means of alterations that result from sorbitol increase and myo-inositol reduction. AR is responsible for the conversion of glucose to sorbitol, which is then converted into fructose by the enzyme sorbitol dehydrogenase (SORD). During the exposition to hyperglycemia, there is an enhanced flux of AR (increased enzyme activity and expression of the aldose reductase gene-ALR2) and a reduced flux of SORD. This imbalance results in the accumulation of sorbitol, which leads to several abnormalities in cellular metabolism and hence contributes to the development of diabetic microvascular complications. The increased risk of DR associated with the presence of the C allele observed in the present study was relevant with the functional studies showing that the C allele is associated with an increased expression of AKR1B1 gene.

Gene Name: CHN2 | Your Genotype: AA

This gene encodes a guanosine triphosphate (GTP)-metabolizing protein that contains a phorbol-ester/diacylglycerol (DAG)-type zinc finger, a Rho-GAP domain, and an SH2 domain. The encoded protein translocates from the cytosol to the Golgi apparatus membrane upon binding by diacylglycerol (DAG). encodes b-2 chimerin that have been shown to regulate cell growth, proliferation, and migration. Previous studies showed decreased expression of CHN2 is associated with high-grade malignant gliomas, breast cancer, and duodenal adenocarcinoma, whereas increased expression of CHN2 is reported to be associated with lymphomas

Gene Name: Near TLR4 | Your Genotype: AA

TLR4 plays an important role in wound healing and any sort of imbalance in TLR4 mediated signaling may abrogate the proper wound healing cascade. a cytoskeletal protein Flightless I modulate wound inflammation, angiogenesis, and remodeling which act via TLR4-MyD88 signaling pathway. Our group has recently shown that differential expression of TLR4 in human diabetic wounds leads to impairment in wound healing cascade and finally into chronic nonhealing ulcers. Deregulation of the TLR4 signaling due to the single nucleotide polymorphisms (SNPs) in the extracellular domain of TLR4 may alter the ligand binding capacity.

Do's and Don'ts

Do's

- Monitor and manage your blood sugar levels.
- If you are diabetic, take prescribed oral diabetes medications or insulin as directed by your physician.
- Consume healthy foods, exercise regularly, and lose excess weight, which can help keep your blood sugar levels in check.
- Keep your blood pressure and cholesterol levels under control.
- Consult a doctor in case of any changes in your vision/eyesight.

Don'ts

- Avoid consuming tobacco containing products.

Diabetic Cataract

What is Diabetic Cataract ?

Diabetic cataract is a condition which causes visual impairment in diabetic patients. A cataract is a dense, cloudy area that forms in the lens of the eye. For people who have cataracts, seeing through cloudy lenses is a bit like looking through a frosty or fogged-up window. Cataract is caused as a result of tissue breakdown and protein clumping. Nuclear cataract begins with a gradual hardening and yellowing of the central zone of the lens, also known as the nucleus. Over time, this hardening and yellowing will expand to the other layers of the lens.

5.6

Diabetic Cataract

Interpretation

As per your genotype, you have a typical risk of developing Diabetic Cataract. If you are diagnosed with diabetes, consult a physician and take measures to lower high blood glucose levels.

Gene Table

Gene Name: CCDC102A | Your Genotype: TC

CCDC102A is coded by coiled-coil domain, proven by many studies as important to cataract, and also periplasmic coiled coil domain relates to blood sugar and diabetic state.

Gene Name: KIAA1671 | Your Genotype: TT

Antibodies against KIAA1671 are present in sera from patients with breast cancer who developed several autoantibodies. closely relates to cell proliferation.

Gene Name: GBA3 | Your Genotype: AA

The protein encoded by this gene is an enzyme that can hydrolyze several types of glycosides. This gene is a polymorphic pseudogene, with the most common allele being the functional allele that encodes the full-length protein. GBA3 was proposed to participate in the pathway of starch and sucrose metabolism. It hydrolyzes numerous glycosides and is involved in the nonlysosomal catabolic pathway. It displays beta-galactosidase, beta-glucosidase and glycosylceramidase activities. It localizes in both cytosol and cytoplasm. Its correlation with DM is evident.

Gene Name: GABRR1/2 | Your Genotype: TT

Gamma-aminobutyric acid (GABA) is the major inhibitory neurotransmitter in the mammalian brain where it acts at GABA receptors, which are ligand-gated chloride channels. The protein encoded by this gene is a member of the rho subunit family and is a component of the GABA type A receptor complex. GABBR is one mutation or divergently transcribed gamma aminobutyrate (GABA). GABBR is involved in multiple human neurodevelopmental disorders. Electrophysiological examination has proven that some drugs will suppress glycosylation of neurotransmitter gamma-aminobutyrate at GABA receptors by antagonizing AMPA/ kainite. In diabetics, GABA concentration will change in various tissues, indicating GABBR changes the susceptibility of DM patients to cataract.

Gene Name: NEDD9 | Your Genotype: GG

The protein encoded by this gene is a member of the CRK-associated substrates family. Members of this family are adhesion docking molecules that mediate protein-protein interactions for signal transduction pathways. This protein is a focal adhesion protein that acts as a scaffold to regulate signaling complexes important in cell attachment, migration and invasion as well as apoptosis and the cell cycle. This protein has also been reported to have a role in cancer metastasis. The NEDD9 docking protein is important in tyrosine kinase-based signaling related to cell adhesion. It works in transmitting growth control signals between focal adhesions at the cell periphery and mitotic spindle in response to adhesion or growth factor signals. It is crucial to integrin beta-1-mediated signaling and negatively regulates E-cadherin membrane localization while promoting E-cadherin degradation, all possibly related to cataract formation. Its correlation with diabetic cataract is beyond doubt.

Gene Name: RPS6KA2 | Your Genotype: TT

This gene encodes a member of the RSK (ribosomal S6 kinase) family of serine/threonine kinases. This kinase contains two non-identical kinase catalytic domains and phosphorylates various substrates, including members of the mitogen-activated kinase (MAPK) signalling pathway. The activity of this protein has been implicated in controlling cell growth and differentiation.

Gene Name: PPARD | Your Genotype: AA

This gene encodes a member of the peroxisome proliferator-activated receptor (PPAR) family. The encoded protein is thought to function as an integrator of transcriptional repression and nuclear receptor signaling. PPARs are involved in the development of several chronic diseases: eg, diabetes, obesity, atherosclerosis, cancer. PPAR agonists also relate to the formation of cataract.

Gene Name: TAC1 | Your Genotype: AA

TAC1 genes are thought to function as neurotransmitters that interact with nerve receptors and smooth muscle cells. They are known to induce behavioral responses and function as vasodilators and secretion. A recent study found that Tac1(-/-) mice demonstrated lower glucose and leptin and increased adiponectin blood levels, along with improved response to insulin challenge after a high-fat diet. Linkage of this gene with DM is evident. Alternative splicing of TAC1 relates to vasodilators and changes body homeostasis, including the lens. This may link TAC1 with diabetic cataract.

Do's and Don'ts

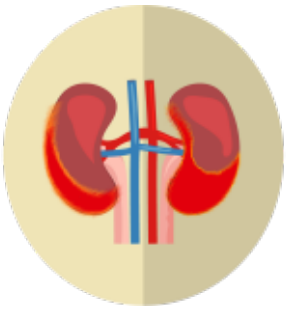
Do's

- Control and maintain normal blood sugar levels, blood pressure, and cholesterol levels.
- Schedule regular appointments for eye testing.

Don'ts

- Avoid smoking and use of tobacco as it is a major risk elevation factor.
- Avoid ignoring temporary vision problems like haziness and blurriness; consult your doctor immediately.

Diabetic Nephropathy



What is Diabetic Nephropathy ?

Diabetic nephropathy is the damage caused to kidneys due to high levels of blood glucose (diabetes mellitus). This occurs as a result of diabetes affecting the arteries in the body, post which the kidney filters blood from those very arteries.

6.4

Diabetic Nephropathy

Interpretation

As per your genotype, you have a slightly elevated risk of developing Diabetic Nephropathy. People with this genotype should maintain proper blood glucose levels, include nutritious food in their diet, and exercise on a regular basis.

Gene Table

Gene Name: IL10 | Your Genotype: CC

The protein encoded by this gene is a cytokine produced primarily by monocytes and to a lesser extent by lymphocytes. This cytokine has pleiotropic effects in immunoregulation and inflammation. It down-regulates the expression of Th1 cytokines, MHC class II Ags, and costimulatory molecules on macrophages. It also enhances B cell survival, proliferation, and antibody production. This cytokine can block NF-kappa B activity, and is involved in the regulation of the JAK-STAT signaling pathway. Genetic variations in the IL10 gene encoding the inflammatory cytokines might confer susceptibility to Diabetic nephropathy by altering their functions or expressions. Interleukin-10 (IL-10) is an immunoregulatory cytokine and is produced by Th2 cells, and this gene plays an important role in regulating T cells, and monocytes/macrophages. It is well known that the encoding gene of IL-10 is located on chromosome 1 (1q31-1q32), and is an anti-inflammatory cytokine, which could inhibit the synthesis of cytokines, such as IL-6, IL-1?, IL-1?, and TNF-? in activated macrophage and IFN? by T cells

Gene Name: SLC2A1/GLUT1 | Your Genotype: GG

This gene encodes a major glucose transporter in the mammalian blood-brain barrier. The encoded protein is found primarily in the cell membrane and on the cell surface, where it can also function as a receptor for human T-cell leukemia virus (HTLV) I and II.

Gene Name: CARS | Your Genotype: TC

This gene encodes a class 1 aminoacyl-tRNA synthetase, cysteinyl-tRNA synthetase. Each of the twenty aminoacyl-tRNA synthetases catalyzes the aminoacylation of a specific tRNA or tRNA isoaccepting family with the cognate amino acid. This gene is one of several located Near the imprinted gene domain on chromosome 11p15.5, an important tumor-suppressor gene region

Gene Name: ACACB | Your Genotype: CC

Catalyzes the ATP-dependent carboxylation of acetyl-CoA to malonyl-CoA. Carries out three functions: biotin carboxyl carrier protein, biotin carboxylase and carboxyltransferase. Involved in inhibition of fatty acid and glucose oxidation and enhancement of fat storage (By similarity). May play a role in regulation of mitochondrial fatty acid oxidation through malonyl-CoA-dependent inhibition of carnitine palmitoyltransferase.

Gene Name: GREM1 | Your Genotype: AA

Encodes gremlin 1. Gremlin is implicated in several developmental pathways and has become increasingly recognized as an important contributor to renal disease. Gremlin influences cell growth and differentiation, particularly through bone morphogenic protein and transforming growth factor-mediated processes.

Gene Name: SLC12A3 | Your Genotype: GG

The SLC12A3 gene (solute carrier family 12, member 3) located on 16q13 encodes a thiazide sensitive Na+ClÐ cotransporter that mediates reabsorption of Na+ and ClÐ in the renal distal convoluted tubule and is expressed specifically in the kidney.

Gene Name: CYBA | Your Genotype: CC

Cytochrome b is comprised of a light chain (alpha) and a heavy chain (beta). This gene encodes the light, alpha subunit which has been proposed as a primary component of the microbicidal oxidase system of phagocytes. Mutations in this gene are associated with autosomal recessive chronic granulomatous disease (CGD), that is characterized by the failure of activated phagocytes to generate superoxide, which is important for the microbicidal activity of these cells.

Gene Name: ACE | Your Genotype: TC

This gene encodes an enzyme involved in catalyzing the conversion of angiotensin I into a physiologically active peptide angiotensin II. Angiotensin II is a potent vasopressor and aldosterone-stimulating peptide that controls blood pressure and fluid-electrolyte balance. This enzyme plays a key role in the renin-angiotensin system. Many studies have associated the presence or absence of a 287 bp Alu repeat element in this gene with the levels of circulating enzyme or cardiovascular pathophysiologies.

Gene Name: Near ACE | Your Genotype: GA

This gene encodes an enzyme involved in catalyzing the conversion of angiotensin I into a physiologically active peptide angiotensin II. Angiotensin II is a potent vasopressor and aldosterone-stimulating peptide that controls blood pressure and fluid-electrolyte balance. This enzyme plays a key role in the renin-angiotensin system. Many studies have associated the presence or absence of a 287 bp Alu repeat element in this gene with the levels of circulating enzyme or cardiovascular pathophysiologies.

Gene Name: CNDP2 | Your Genotype: TT

CNDP2, also known as tissue carnosinase and peptidase A (EC 3.4.13.18), is a nonspecific dipeptidase rather than a selective carnosinase.

Gene Name: Near CNDP1 | Your Genotype: AC

This gene encodes a member of the M20 metalloprotease family. The encoded protein is specifically expressed in the brain, is a homodimeric dipeptidase which was identified as human carnosinase.

Gene Name: TGFB1 | Your Genotype: TC

This gene encodes a secreted ligand of the TGF-beta (transforming growth factor-beta) superfamily of proteins. Ligands of this family bind various TGF-beta receptors leading to recruitment and activation of SMAD family transcription factors that regulate gene expression. The encoded preproprotein is proteolytically processed to generate a latency-associated peptide (LAP) and a mature peptide, and is found in either a latent form composed of a mature peptide homodimer, a LAP homodimer, and a latent TGF-beta binding protein, or in an active form consisting solely of the mature peptide homodimer. The mature peptide may also form heterodimers with other TGFB family members. This encoded protein regulates cell proliferation, differentiation and growth, and can modulate expression and activation of other growth factors including interferon gamma and tumor necrosis factor alpha. This gene is frequently upregulated in tumor cells, and mutations in this gene result in Camurati-Engelmann disease. Transforming growth factor-beta (TGF-B) is a multifunctional regulator that modulates cell proliferation, differentiation, apoptosis, adhesion and migration of various cell types and induces the production of extracellular matrix proteins. It is synthesized by many renal cell types and exerts its biological functions through a variety of signalling pathways, including the Smad and MAPK pathways. In renal diseases, TGF-B is upregulated and induces renal cells to produce extracellular matrix proteins leading to glomerulosclerosis as well as tubulointerstitial fibrosis, which ultimately result in renal dysfunctionÓ

Gene Name: MMP9 | Your Genotype: GA

Matrix metalloproteinases (MMPs) are important proteolytic enzymes that are involved in connective tissue remodeling and in degradation of extracellular matrix. Proteins of the matrix metalloproteinase (MMP) family are involved in the breakdown of extracellular matrix in normal physiological processes, such as embryonic development, reproduction, and tissue remodeling, as well as in disease processes, such as arthritis and metastasis. Most MMP's are secreted as inactive proproteins which are activated when cleaved by extracellular proteinases. The enzyme encoded by this gene degrades type IV and V collagens. Studies in rhesus monkeys suggest that the enzyme is involved in IL-8-induced mobilization of hematopoietic progenitor cells from bone marrow, and murine studies suggest a role in tumor-associated tissue remodeling.

Gene Name: SOD1 | Your Genotype: GG

The protein encoded by this gene binds copper and zinc ions and is one of two isozymes responsible for destroying free superoxide radicals in the body. The encoded isozyme is a soluble cytoplasmic protein, acting as a homodimer to convert naturally-occuring but harmful superoxide radicals to molecular oxygen and hydrogen peroxide. The other isozyme is a mitochondrial protein. Mutations in this gene have been implicated as causes of familial amyotrophic lateral sclerosis.

Gene Name: Near SOD1 | Your Genotype: AA

The protein encoded by this gene binds copper and zinc ions and is one of two isozymes responsible for destroying free superoxide radicals in the body. The encoded isozyme is a soluble cytoplasmic protein, acting as a homodimer to convert naturally-occuring but harmful superoxide radicals to molecular oxygen and hydrogen peroxide. The other isozyme is a mitochondrial protein. Mutations in this gene have been implicated as causes of familial amyotrophic lateral sclerosis.

Gene Name: AGTR1 | Your Genotype: AA

The protein encoded by this gene, pre-angiotensinogen or angiotensinogen precursor, is expressed in the liver and is cleaved by the enzyme renin in response to lowered blood pressure. The protein is involved in maintaining blood pressure and in the pathogenesis of essential hypertension and preeclampsia. Angiotensin II receptors (AGTR1) gene, which mediates RAS proteins actions on renal tissue. RAS plays a central role in the regulation of blood pressure, sodium homeostasis, and renal hemodynamics. Its action is mediated primarily by angiotensin II which acts on type 1 angiotensin II receptors (AGTR1) in the vasculature, leading to vasoconstriction, and on the zona glomerulosa, where it stimulates the secretion of aldosterone and leading to mesengial fibrosis

Gene Name: PPARG | Your Genotype: CC

This gene encodes a member of the peroxisome proliferator-activated receptor (PPAR) subfamily of nuclear receptors. PPARs form heterodimers with retinoid X receptors (RXRs) and these heterodimers regulate transcription of various genes. Three subtypes of PPARs are known: PPAR-alpha, PPAR-delta, and PPAR-gamma. The protein encoded by this gene is PPAR-gamma and is a regulator of adipocyte differentiation. PPAR-G2 is a nuclear receptor that serves important roles in intermediate metabolism. PPAR gamma (PPARG) nuclear receptor, which is mainly expressed in adipose tissue but is also found in pancreatic beta cells, vascular endothelium, and macrophage. PPARg, a member of the nuclear hormone receptor superfamily of ligand-activated transcription factors, plays a key role in regulating the expression of numerous genes involved in lipid metabolism, metabolic syndrome, inflammation. Additionally, PPAR-gamma has been implicated in the pathology of numerous diseases including obesity, diabetes, atherosclerosis and cancer.

Gene Name: ADIPOQ | Your Genotype: AG

This gene is expressed in adipose tissue exclusively. It encodes a protein with similarity to collagens X and VIII and complement factor C1q. The encoded protein circulates in the plasma and is involved with metabolic and hormonal processes. Mutations in this gene are associated with adiponectin deficiency. Plasma adiponectin levels are inversely correlated with diabetes and insulin resistance. Adiponectin is mainly secreted by adipocytes and acts as a vital modulator in insulin resistance and lipid metabolism. It is commonly believed that adiponectin is insulin-sensitizing and facilitates B-cell oxidation.

Gene Name: CCR5 | Your Genotype: GG

Chemokine monocyte chemoattractant protein-1 (MCP-1)/CC-chemokine ligand 2 as a major promoter of inflammation, renal injury, and fibrosis in diabetic nephropathy. Researchers have found that diabetes induces kidney MCP-1 production and that urine MCP-1 levels can be used to assess renal inflammation in this disease.

Gene Name: GPX1 | Your Genotype: CC

Glutathione peroxidase (GPx) plays a principal role in the enzymatic anti-oxidant defence system, detoxifying harmful lipid-peroxides in the presence of glutathione. GPx has 6 isoforms (GPx-1e6), however GPx-1 is ubiquitous and is the most abundant form in human cells including vascular endothelium.

Gene Name: IL8 | Your Genotype: AA

Genetic variations in the genes encoding the inflammatory cytokines might confer susceptibility to Diabetic nephropathy by altering their functions or expressions.

Gene Name: UNC5C | Your Genotype: AG

This gene product belongs to the UNC-5 family of netrin receptors. Netrins are secreted proteins that direct axon extension and cell migration during neural development.

Gene Name: Near SLC10A7 | Your Genotype: AA

SLC10A7 (Solute Carrier Family 10 Member 7) is a Protein Coding gene. This gene encodes a member of the Solute Carrier Family SLC10, which comprises two bile acid carriers, one steroid sulfate transporter and four orphan carriers. SLC10A7 is a 10-transmembrane-domain transporter located at the plasma membrane, with a yet unidentified substrate.

Gene Name: Near OR14 | Your Genotype: CC

OR genes are the largest gene family in the human genome comprising ~400 genes and ~600 pseudogenes. The extremely high level of SNP content in promoters of OR genes raise the question about the functional significance of such SNPs for olfactory cognition as well as their association with human diseases.

Gene Name: VEGFA | Your Genotype: CT

This gene is a member of the PDGF/VEGF growth factor family. It encodes a heparin-binding protein, which exists as a disulfide-linked homodimer. This growth factor induces proliferation and migration of vascular endothelial cells, and is essential for both physiological and pathological angiogenesis. Allelic variants of this gene have been associated with microvascular complications of diabetes 1 (MVCD1) and atherosclerosis.

Gene Name: NOS3 | Your Genotype: TT

Nitric oxide is a reactive free radical which acts as a biologic mediator in several processes, including neurotransmission and antimicrobial and antitumoral activities. Nitric oxide is synthesized from L-arginine by nitric oxide synthases. Variations in this gene are associated with susceptibility to coronary spasm.

Gene Name: ELMO1 | Your Genotype: GA

This gene encodes a member of the engulfment and cell motility protein family. These proteins interact with dedicator of cytokinesis proteins to promote phagocytosis and cell migration. Increased expression of this gene and dedicator of cytokinesis 1 may promote glioma cell invasion, and single nucleotide polymorphisms in this gene may be associated with diabetic nephropathy.

Gene Name: FRMD3 | Your Genotype: CC

The protein encoded by this gene is a single pass membrane protein primarily found in ovaries. A similar protein in erythrocytes helps determine the shape of red blood cells, but the function of the encoded protein has not been determined. There is some evidence that this is a tumor suppressor gene, and there is also evidence linking defects in this gene to susceptibility to diabetic nephropathy in type 1 diabetes.

Do's and Don'ts

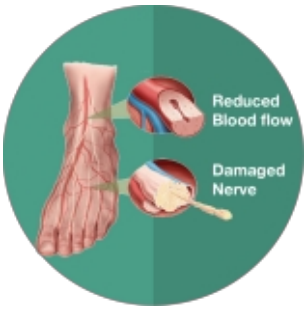
Do's

- Exercise regularly to decrease chances of many diabetic complications.
- Eat a nutritious diet that is low in carbohydrates, fats, and sugars.
- Drink water at regular intervals.
- Keep your blood glucose levels in check.

Don'ts

- Avoid smoking and consumption of alcohol as they increase the risk of nephropathy.
- Avoid stress and high blood pressure levels.
- Avoid overeating as obesity is associated with an increased risk of nephropathy.

Diabetic Neuropathy



What is Diabetic Neuropathy ?

Diabetic neuropathy is a family of nerve disorders caused by diabetes. Over time, diabetes can result in some degree of nerve damage throughout the body. Some people with nerve damage experience no symptoms; others may experience symptoms such as pain, tingling or numbness, loss of feeling in the hands, arms, feet, and legs. Nerve problems can occur in every organ system including the digestive tract, heart, and sex organs.

5.3

Diabetic Neuropathy

Interpretation

As per your genotype, you have a typical risk of developing Diabetic Neuropathy. However, high blood glucose levels, high cholesterol levels, and abnormal fat levels may increase the risk.

Gene Table

Gene Name: NOS1AP | Your Genotype: TC

NOS1AP encodes a cytosolic protein that binds to neuronal nitric oxide synthase (gene-NOS1 or protein-nNOS) via an N-terminal phosphotyrosine binding (PDZ) domain. NOS1AP stabilizes nNOS potentiating its subcellular influence. As a result NOS1AP enhances the activity of nNOS to activate and bind to G-proteins

Gene Name: IL10 | Your Genotype: AA

The protein encoded by this gene is a cytokine produced primarily by monocytes and to a lesser extent by lymphocytes. This cytokine has pleiotropic effects in immunoregulation and inflammation. It down-regulates the expression of Th1 cytokines, MHC class II Ags, and costimulatory molecules on macrophages. It also enhances B cell survival, proliferation, and antibody production. This cytokine can block NF-kappa B activity, and is involved in the regulation of the JAK-STAT signaling pathway. The unusual immune responses like surplus production of inflammatory cytokines, TNFa and IFNc would be suppressed by interleukin (IL) 10 via immunosuppressive and anti-inflammatory cytokine action by inhibiting the activation and effector function of T cells, monocytes, and macrophages thereby giving the protection against the deleterious effects.

Gene Name: UCP2 | Your Genotype: GG

The uncoupling protein 2 (UCP2) is a member of the mitochondrial inner membrane carrier family and is expressed in many tissues including white adipose tissue, liver, kidney, pancreatic islets, macrophages and retinal endothelial cells and pericytes. UCP2 uncouples the substrate oxidation from the ATP synthesis, dissipating the membrane potential energy and consequently decreasing ATP production by the mitochondrial respiratory chain. The uncoupling thus leads to tissue-specific functions such as decreasing ROS formation by mitochondria, regulation of free fatty acids metabolism and inhibition of insulin secretion from beta cells. Oxidative damage due to hyperglycemia is reported to be one of the major factors contributing to the development of DPN. The main source of reactive oxygen species (ROS) in diabetes is thought to be the mitochondria. Uncoupling proteins (UCPs) can provide a controlled leak of protons across the inner membrane of the mitochondria and thus uncouple oxidative phosphorylation from respiration, with a concomitant decrease in inner mitochondrial membrane potential and free radical generation. The mitochondrial UCP families, particularly UCP2, which is expressed in various human tissues, are thought to contribute to control of body temperature and energy metabolism as well as to regulation of mitochondrial production of ROS. Therefore, the UCP2 gene is considered to be involved in DPN.

Gene Name: IFNG | Your Genotype: TT

Interferon G (IFN-G) generated by phagocytic cells upon cellular activation are also known to be angiogenic, fibrogenic, and vasculoreactive. IFN-G is expressed at high levels in ocular tissues among patients with peripheral diabetic retinopathy and is considered an indirect inducer of angiogenesis through the activation of VEGF (vascular endothelial growth factor). Its overproduction stimulates the synthesis of other pro-inflammatory cytokines such as interferon gamma (IFNc) which has a pivotal role in the induction of immune mediated inflammatory response.

Gene Name: TLR4 | Your Genotype: AA

TLR4 plays an important role in wound healing and any sort of imbalance in TLR4 mediated signaling may abrogate the proper wound healing cascade. a cytoskeletal protein Flightless I modulate wound inflammation, angiogenesis, and remodeling which act via TLR4-MyD88 signaling pathway. The recognition of microbial components by mammalian TLRs plays an important role in activation of the innate immune response and subsequent proinflammatory reactions. In addition to binding lipopolysaccharide (LPS), TLR-4 also interacts with endogenous ligands such as ox LDL, heat shock proteins 60 and 70, fibrinogen, and fibronectin, which are also elevated in diabetes. Acquired immunity and inflammation as well as oxidative stress and apoptosis may play a crucial role in the pathogenesis of late diabetic neuropathy.

Do's and Don'ts

Do's

- Keep your blood glucose levels at normal, as maintaining safe blood glucose levels protects nerves throughout the body.
- Exercise regularly and avoid overeating.

Don'ts

- Avoid consumption of tobacco and alcohol.
- Avoid physical injuries.
- Avoid treating any neurological symptoms as normal; consult your doctor right away.

Category Summary

WEIGHT MANAGEMENT

6.4

Obesity

Obesity

What is Obesity ?

Obesity is a condition involving excessive body fat that increases the risk of health problems. Obesity often results from taking in more calories than are burned by exercise and normal daily activities. Body mass index of more than 30, indicates obesity. Excessive body fat increases the risk of serious health problems.

6.4

Obesity

Interpretation

As per your genotype, you have a slightly elevated risk of developing Obesity. People with this genotype should maintain a healthy weight, as obesity can further lead to osteoarthritis, heart disease, blood lipid abnormalities, stroke, type 2 diabetes, sleep apnea, reproductive problems, gallstones, and certain cancers.

Gene Table

Gene Name: LEPR | Your Genotype: AG

The protein encoded by this gene belongs to the gp130 family of cytokine receptors that are known to stimulate gene transcription via activation of cytosolic STAT proteins. This protein is a receptor for leptin (an adipocyte-specific hormone that regulates body weight), and is involved in the regulation of fat metabolism, as well as in a novel hematopoietic pathway that is required for normal lymphopoiesis. Mutations in this gene have been associated with obesity and pituitary dysfunction.

Gene Name: APOA2 | Your Genotype: TT

This gene encodes apolipoprotein (apo-) A-II, which is the second most abundant protein of the high density lipoprotein particles. The protein is found in plasma as a monomer, homodimer, or heterodimer with apolipoprotein D. Defects in this gene may result in apolipoprotein A-II deficiency or hypercholesterolemia.

Gene Name: APOA5 | Your Genotype: GG

The protein encoded by this gene is an apolipoprotein that plays an important role in regulating the plasma triglyceride levels, a major risk factor for coronary artery disease. It is a component of high density lipoprotein and is highly similar to a rat protein that is upregulated in response to liver injury. Mutations in this gene have been associated with hypertriglyceridemia and hyperlipoproteinemia type 5. This gene is located proximal to the apolipoprotein gene cluster on chromosome 11q23.

Gene Name: NMB | Your Genotype: CC

This gene encodes a member of the bombesin-like family of neuropeptides, which negatively regulate eating behavior. The encoded protein may regulate colonic smooth muscle contraction through binding to its cognate receptor, the neuromedin B receptor (NMBR). Polymorphisms of this gene may be associated with hunger, weight gain and obesity.

Gene Name: FTO | Your Genotype: AT

This gene is a nuclear protein of the AlkB related non-haem iron and 2-oxoglutarate-dependent oxygenase superfamily but the exact physiological function of this gene is not known. Other non-heme iron enzymes function to reverse alkylated Diabetic nephropathyA and RNA damage by oxidative demethylation. Studies in mice and humans indicate a role in nervous and cardiovascular systems and a strong association with body mass index, obesity risk, and type 2 diabetes.

Gene Name: MC4R | Your Genotype: TC

The protein encoded by this gene is a membrane-bound receptor and member of the melanocortin receptor family. The encoded protein interacts with adrenocorticotropic and MSH hormones and is mediated by G proteins. This is an intronless gene. Defects in this gene are a cause of autosomal dominant obesity.

Gene Name: Near TMEM18 | Your Genotype: CC

The TMEM18 gene codes for a poorly characterized transmembrane protein. One study indicated that this protein is located in the nuclear envelope in neural stem cells. TMEM18 may be involved in cell migration as overexpression of the protein increases the migration of neural stem cells towards glioma in the rat brain. A preliminary expression profiling of TMEM18, that accompanied the first GWA study, suggested that it is ubiquitously expressed, but with certain differences between tissues. In line with the proposed role in the regulation of body weight, TMEM18 was shown to be expressed in the brain, including the hypothalamus, the region responsible for the control of energy homeostasis.

Gene Name: POMC | Your Genotype: CT

This gene encodes a preproprotein that undergoes extensive, tissue-specific, post-translational processing via cleavage by subtilisin-like enzymes known as prohormone convertases. The encoded protein is synthesized mainly in corticotroph cells of the anterior pituitary where four cleavage sites are used; adrenocorticotrophin, essential for normal steroidogenesis and the maintenance of normal adrenal weight, and lipotropin beta are the major end products. In other tissues, including the hypothalamus, placenta, and epithelium, all cleavage sites may be used, giving rise to peptides with roles in pain and energy homeostasis, melanocyte stimulation, and immune modulation. These include several distinct melanotropins, lipotropins, and endorphins that are contained within the adrenocorticotrophin and beta-lipotropin peptides. The antimicrobial melanotropin alpha peptide exhibits antibacterial and antifungal activity. Mutations in this gene have been associated with early onset obesity, adrenal insufficiency, and red hair pigmentation.

Gene Name: PPARG | Your Genotype: CC

This gene encodes for the protein Peroxisome Proliferator-Activated Receptor Gamma (PPARG). It is a transcriptional regulator involved in energy control and lipid/glucose homeostasis. It stimulates lipid uptake and adipogenesis by fat cells.

Gene Name: ADIPOQ | Your Genotype: AA

This gene is expressed in adipose tissue exclusively. It encodes a protein with similarity to collagens X and VIII and complement factor C1q. The encoded protein circulates in the plasma and is involved with metabolic and hormonal processes. Stimulates AMPK phosphorylation and activation in the liver and the skeletal muscle, enhancing glucose utilization and fatty-acid combustion. Antagonizes TNF-alpha by negatively regulating its expression in various tissues such as liver and macrophages, and also by counteracting its effects. Inhibits endothelial NF-kappa-B signaling through a cAMP-dependent pathway.

Gene Name: Near GNPDA2 | Your Genotype: AA

The protein encoded by this gene is an allosteric enzyme that catalyzes the reversible reaction converting D-glucosamine-6-phosphate into D-fructose-6-phosphate and ammonium. Variations of this gene have been reported to be associated with influencing body mass index and susceptibility to obesity.

Gene Name: PON1 | Your Genotype: TT

This gene encodes a member of the paraoxonase family of enzymes and exhibits lactonase and ester hydrolase activity. Following synthesis in the kidney and liver, the enzyme is secreted into the circulation, where it binds to high density lipoprotein (HDL) particles and hydrolyzes thiolactones and xenobiotics, including paraoxon, a metabolite of the insecticide parathion. Polymorphisms in this gene may be associated with coronary artery disease and diabetic retinopathy.

Gene Name: NPY | Your Genotype: GG

This gene encodes a neuropeptide that is widely expressed in the central nervous system and influences many physiological processes, including cortical excitability, stress response, food intake, circadian rhythms, and cardiovascular function. Neuropeptide Y (NPY, OMIM 162640) is a 36-amino acid polypeptide that is present in the central and peripheral nervous systems, several peripheral organs, and plasma. Both in vivo and in vitro studies have demonstrated that NPY inhibits glucose-stimulated insulin secretion. A polymorphism in this gene resulting in a change of leucine 7 to proline in the signal peptide is associated with elevated cholesterol levels, higher alcohol consumption, and may be a risk factor for various metabolic and cardiovascular diseases. The protein also exhibits antimicrobial activity against bacteria and fungi.

Do's and Don'ts

Do's

- Maintain a healthy body weight.
- Eat a well-balanced diet and exercise regularly.

Don'ts

- Avoid eating foods that are processed, high in fat, and high in calories.
- Avoid drinking too much alcohol.

Category Summary

LIPID METABOLISM

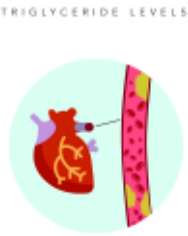
6.9

Triglyceride Levels

5.9

Cholesterol Levels

Triglyceride Levels



What is Triglyceride Levels ?

Triglycerides are a major constituent of body fat in humans. Fatty acids contained in triglycerides are an essential source of energy for the cells in our body. Triglyceride concentration can be measured in blood and may provide valuable information about metabolism and general health; high levels may reflect underlying metabolic disorders and evidence shows that high blood triglycerides are associated with an increased risk of heart disease. Fasting triglyceride levels below 150 mg/dl are within the normal range.

6.9

Triglyceride Levels

Interpretation

As per your genotype, you have a slightly elevated risk of developing high Triglyceride Levels. High blood sugar levels, diabetes, family history, smoking, lack of exercise, and being overweight could increase the risk of developing high triglyceride levels.

Gene Table

Gene Name: GALNT2 | Your Genotype: AG

GALNT2 modulates HDL metabolism, at least partly, by inducing O-linked glycosylation and increased function of PLTP (i.e. a Phospholipid Transfer Protein), a known positive modulator of serum HDL-C levels

Gene Name: BUD13 | Your Genotype: GA

The BUD13/ZNF259 genes are located on chromosome 11q23.3 and encode for BUD13 homolog protein and zinc finger protein (ZPR1) respectively. BUD13 is one of the subunits of the RES complex, which was previously identified in yeast as a splicing factor that affects nuclear pre-mRNA retention. ZNF259, also known as ZPR1, is an essential regulatory protein for normal nuclear function in cell proliferation and signal transduction. The promoter site of ZNF259 was bounded by the proxisome proliferator-activated receptor gamma (PPARG) 1 and 2, which play an important role in insulin sensitivity and obesity.

Gene Name: ZNF259 | Your Genotype: CG

ZNF259 genes, which are known to play a key role in lipid metabolism. Lipoprotein (a) consists of a cholesterol-laden low-density lipoprotein (LDL)–like particle bound to a plasminogen-like glycoprotein, apolipoprotein (a). Lipoprotein (a) has been shown to be associated with thrombosis and atherosclerosis, and genetic data support a role for lipoprotein (a) in atherosclerotic stenosis and MetS.

Gene Name: APOA5 | Your Genotype: TC

Encodes Apolipoprotein A-5, major component of VLDL, Chylomicrons, HDL. APOA5 functions as an activator of lipoprotein lipase (key enzyme in triglyceride catabolism) and inhibits hepatic VLDL-particle production and assembly (by binding to cellular membranes and lipids). It accelerates the hepatic uptake of lipoprotein remnants (activates VLDL receptor). Certain variant in this genes are associated with higher fasting TGs concentrations ($P<0.01$) in people consuming a high n-6 PUFA diet.

Gene Name: GCKR | Your Genotype: CT

Glucokinase regulatory protein (GKRP; gene symbol: GCKR) is a rate-limiting factor of glucokinase (GCK), which functions as a key glycolytic enzyme for maintaining glucose homeostasis

Gene Name: TBL2 | Your Genotype: CC

MLXIPL/TBL2 loci containing genes encoding TBL2 and MLXIPL which is also called carbohydrate-responsive element binding protein (chREBP). TBL2 is associated with triglyceride (TG) metabolism [14]. Research has showed that ectopic TBL2 over-expression significantly reduces cellular cholesterol and miRNA-mediated knockdown raises 15-30% cholesterol levels. However the role for TBL2 in modulation of cellular cholesterol is undefined at this time. The mechanism of MLXIPL in lipid metabolism is also unclear in detail, the function of MLXIPL as a transcriptional mediator is described to connect glycolysis with lipogenesis, and regulate lipogenesis and glucose utilization in the liver by a phosphorylation/dephosphorylation pathway. In the liver, chREBP mediates activation of several regulator enzymes of glycolysis and lipogenesis [15,16]. When the hepatocytes have ample glucose, xylulose-5-phosphate is produced in the pentose phosphate pathway and activates protein phosphatase 2A, which dephosphorylates chREBP and activated it translocated to the nucleus. Nuclear chREBP combined with MLX and binds carbohydrate response elements to channel the transcription of genes involved in glycolysis, lipogenesis, TG synthesis and very-low-density lipoprotein secretion.

Gene Name: MLXIPL | Your Genotype: CC

This gene encodes a basic helix-loop-helix leucine zipper transcription factor of the Myc/Max/Mad superfamily. This protein forms a heterodimeric complex and binds and activates, in a glucose-dependent manner, carbohydrate response element (ChoRE) motifs in the promoters of triglyceride synthesis genes.

Gene Name: Near TRIB1 | Your Genotype: GA

The tribbles family of genes encode a group of highly conserved pseudokinase proteins, which are thought to act as adaptors in several signalling pathways that are intimately involved in the regulation of a number of key cellular processes, including MAPK, and PI3K pathways. Tribbles have also been shown to interact with ubiquitin ligases, thereby promoting degradation of target proteins. Tribbles have been implicated in a number of diseases including leukaemia, metabolic syndromes and cardiovascular disease.

Gene Name: APOC1 | Your Genotype: AA

This gene encodes a member of the apolipoprotein C1 family. This gene is expressed primarily in the liver, and it is activated when monocytes differentiate into macrophages. The encoded protein plays a central role in high density lipoprotein (HDL) and very low density lipoprotein (VLDL) metabolism. This protein has also been shown to inhibit cholesteryl ester transfer protein in plasma.

Do's and Don'ts

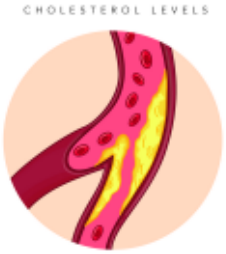
Do's

- Maintain appropriate body weight. If you have mild to moderate hypertriglyceridemia, focus on cutting calories as extra calories in the body are converted to triglycerides and stored as fat.
- Exercise regularly.
- Replace saturated fats with healthier fats.

Don'ts

- Avoid consuming sugar, refined carbohydrates, and simple carbohydrates since they can increase triglyceride levels.
- Avoid trans fats or foods with hydrogenated oils or fats.
- Avoid consuming alcohol as it is high in calories and sugar; it also has a particularly potent effect on triglycerides.

Cholesterol Levels



What is Cholesterol Levels ?

Cholesterol is a waxy substance found in blood. Your body needs cholesterol to build healthy cells, but high levels of cholesterol can increase your risk of heart disease. With high cholesterol, you can develop fatty deposits in your blood vessels. Eventually, these deposits grow, making it difficult for enough blood to flow through your arteries. Sometimes, those deposits can break suddenly and form a clot that causes a heart attack or stroke. There are different types of cholesterol: Very-Low-Density Lipoprotein (VLDL) Cholesterol, Low-Density Lipoprotein (LDL) Cholesterol, and High-Density Lipoprotein (HDL) Cholesterol.

5.9

Cholesterol Levels

Interpretation

As per your genotype, you have a typical risk of developing high Cholesterol Levels. However, a positive family history of high cholesterol levels, smoking, obesity, diabetes, and an unhealthy diet are some of the factors that can increase the risk.

Gene Table

Gene Name: CELSR2

Your Genotype: TT

The protein encoded by this gene is a member of the flamingo subfamily, part of the cadherin superfamily. The flamingo subfamily consists of nonclassic-type cadherins; a subpopulation that does not interact with catenins. The flamingo cadherins are located at the plasma membrane and have nine cadherin domains, seven epidermal growth factor-like repeats and two laminin A G-type repeats in their ectodomain. They also have seven transmembrane domains, a characteristic unique to this subfamily. It is postulated that these proteins are receptors involved in contact-mediated communication, with cadherin domains acting as homophilic binding regions and the EGF-like domains involved in cell adhesion and receptor-ligand interactions. The specific function of this particular member has not been determined.

Gene Name: PSRC1 | Your Genotype: AA

Chromosome 1p13.3 maps in close proximity to the cadherin EGF LAG seven-pass G-type receptor 2 and the proline/serine-rich coiled-coil protein 1 (PSRC1) genes, which regulate cell adhesion, intracellular trafficking, and proliferation; additionally, it maps in proximity to the gene coding sortilin (SORT1), a cell surface receptor which is involved in the glucose and lipid uptake

Gene Name: APOA1 | Your Genotype: GG

This gene encodes apolipoprotein A-I, which is the major protein component of high-density lipoprotein (HDL) in plasma. The encoded preproprotein is proteolytically processed to generate the mature protein, which promotes cholesterol efflux from tissues to the liver for excretion, and is a cofactor for lecithin-cholesterol acyltransferase (LCAT), an enzyme responsible for the formation of most plasma cholesteryl esters.

Gene Name: KCTD10 | Your Genotype: CC

The protein encoded by this gene binds proliferating cell nuclear antigen (PCNA) and may be involved in DNA synthesis and cell proliferation. In addition, the encoded protein may be a tumor suppressor. Several protein-coding and non-protein coding transcript variants have been found for this gene.

Gene Name: MMAB | Your Genotype: CC

This gene encodes for a protein that catalyses the final step in the conversion of Vitamin B12 into adenosylcobalamin. Mutation in the MMAB gene could result in diminished adenosycobalamin levels and causes accumulation of methyl-malonic acid. Consequently, causing life threatening acidosis and can be treated by Vitamin B12 supplementation. Although the role of MMAB is not well understood, its involvement in cholesterol synthesis through SREBP2 may explain its relation with carbohydrate intake.

Gene Name: Near HNF1A | Your Genotype: CA

Hepatocyte nuclear factor 4α (HNF4α, NR2A1) is a member of the nuclear receptor superfamily. It is highly expressed in the liver, with lower levels in the kidney, intestine and pancreatic β cells. Acute loss of hepatic HNF4α results in striking phenotypes, including low blood triglyceride and cholesterol levels, fatty liver and hepatomegaly. These changes are associated with reduced lipogenesis, de novo cholesterol synthesis and VLDL secretion. Consistent with changes, the expression of numerous genes that are involved in lipid metabolism is significantly altered.

Gene Name: Near LIPC | Your Genotype: GG

The LIPC gene provides instructions for making an enzyme called hepatic lipase. This enzyme is produced by liver cells and released into the bloodstream where it helps with the conversion of fat-transporting molecules called very low-density lipoproteins (VLDLs) and intermediate-density lipoproteins (IDLs) to low-density lipoproteins (LDLs).

Gene Name: LIPC | Your Genotype: TT

LIPC encodes hepatic triglyceride lipase, which is expressed in liver. LIPC has the dual functions of triglyceride hydrolase and ligand/bridging factor for receptor-mediated lipoprotein uptake.

Gene Name: NUTF2 | Your Genotype: GG

This gene encodes a cytosolic factor that facilitates protein transport into the nucleus. The encoded protein is required for nuclear import of the small Ras-like GTPase, Ran which is involved in numerous cellular processes. This protein also interacts with the nuclear pore complex glycoprotein p62.

Gene Name: LIPG | Your Genotype: CT

EL is mainly synthesized by endothelial cells. It is also expressed in the liver, lung, macrophage, testis, ovary, and placenta. EL lipolytic activity showed that the high-density lipoprotein cholesterol (HDL-C) is the preferred substrate for EL.

Gene Name: LDLR | Your Genotype: TT

The LDLR gene provides instructions for making a protein called a low-density lipoprotein receptor. This receptor binds to particles called low-density lipoproteins (LDLs), which are the primary carriers of cholesterol in the blood.

Gene Name: APOC1 | Your Genotype: AA

This gene encodes a member of the apolipoprotein C1 family. This gene is expressed primarily in the liver, and it is activated when monocytes differentiate into macrophages. The encoded protein plays a central role in high density lipoprotein (HDL) and very low density lipoprotein (VLDL) metabolism. This protein has also been shown to inhibit cholesteryl ester transfer protein in plasma.

Gene Name: LPL

Your Genotype: CC

This gene encodes for the protein Lipoprotein Lipase. This enzyme breaks down the Triglycerides present in Lipoproteins into free fatty acids.

Do's and Don'ts

Do's

- Exercise regularly for 30 minutes.
- Eat a balanced, low-salt diet which includes foods rich in healthy fats and omega 3 fatty acids.
- Try to restrict the intake of trans fats and saturated fats.
- Maintain a healthy weight.

Don'ts

- Avoid overconsumption of alcohol.
- Avoid smoking.
- Avoid eating foods rich in saturated fats such as animal fats and full fat dairy products as these could increase risk of developing hypercholesterolemia.

Category Summary

CVD

7.4
Atherosclerosis

6.0
Stroke

5.4
Cardiomyopathy

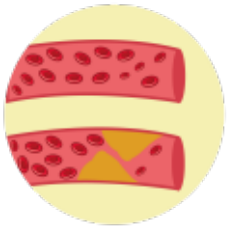
6.2
Atrial fibrillation

6.2
Coronary Artery disease

7.1
Coronary Heart Disease

6.7
Myocardial Infarction

Atherosclerosis



What is Atherosclerosis ?

Atherosclerosis is a disease in which plaques made up of fat, cholesterol, calcium, and other substances buildup in artery walls, thus narrowing the opening of the arteries and restricting blood flow, leading to cardiovascular diseases. When these fatty plaques rupture, they form a blood clot that can further limit or even block the flow of oxygen-rich blood to organs and other parts of the body.

7.4

Atherosclerosis

Interpretation

As per your genotype, you have a slightly elevated risk of developing Atherosclerosis. Maintain a proper diet, monitor body weight, and incorporate a proper diet that contains less amounts of saturated fat. Exercise daily for at least 30 minutes to further reduce your risk.

Gene Table

Gene Name: CD40 | Your Genotype: CC

CD40, a 50-kDa cell surface transmembrane glycoprotein receptor of the tumor necrosis factor receptor (TNFR) superfamily, which is expressed on the surface of immune cells as well as non-immune cells, determines T cell responses to antigen presentation and B cells immunoglobulin isotype switching . A C/T single nucleotide polymorphism (SNP) (rs1883832) in the 5' untranslated region of CD40 gene located at the -1 position within the Kozak sequence. The expression of the CD40-CD40L system on platelets and B lymphocytes was as well found to be up-regulated in patients with ACS.

Gene Name: HDAC9 | Your Genotype: GA

Histones play a critical role in transcriptional regulation, cell cycle progression, and developmental events. Histone acetylation/deacetylation alters chromosome structure and affects transcription factor access to Diabetic nephropathyA. The protein encoded by this gene has sequence homology to members of the histone deacetylase family. This encoded protein may play a role in hematopoiesis.

Gene Name: TNFRSF11B

Your Genotype: GC

The protein encoded by this gene is a member of the TNF-receptor superfamily. This protein is an osteoblast-secreted decoy receptor that functions as a negative regulator of bone resorption. This protein specifically binds to its ligand, osteoprotegerin ligand, both of which are key extracellular regulators of osteoclast development. Osteoprotegerin (OPG), also known as the osteoclastogenesis inhibitory factor, is a member of the tumor necrosis factor receptor superfamily of cytokines. OPG inhibits the production of osteoclasts via blocking the differentiation of macrophages, and it also inhibits the function of differentiated osteoclasts, thereby preventing bone resorption. OPG may have a role in the formation of vascular disease. OPG-deficient mice exhibit severe osteoporosis and vascular calcification of the aorta and renal arteries.

Do's and Don'ts

Do's

- Exercise regularly as it will help in improving blood circulation, lowering blood pressure, and maintaining weight.
- Include omega 3 rich foods in your diet.

Don'ts

- Avoid foods that are high in saturated fats.
- Avoid consumption of alcohol and tobacco, as these are the leading causes of atherosclerosis.

Stroke

What is Stroke ?

Commonly, a stroke occurs in the brain due to deficiency of oxygen and blood supply (blocked artery) to the brain (ischemia). Due to this the brain cells (neurons) cannot make enough energy and eventually die. It causes brain damage by affecting the energy dependent pathways. Symptoms of stroke includes sudden numbness, or weakness of the face, arms or legs, loss of vision, trouble walking, dizziness, and sudden severe headaches with no known cause.

6.0

Stroke

Interpretation

As per your genotype, you have typical risk of developing Stroke. Hypertension, smoking, diabetes, any previous occurence of stroke or a transient ischemic attack (TIA) in the family could increase one's risk of developing Stroke.

Gene Table

Gene Name: NINJ2 | Your Genotype: AG

NINJ2 encodes ninjurin2, a member of the 'ninjurin' or nerve-injury-induced protein family. It plays a role in nerve regeneration and may increase the risk of stroke by altering brain response to ischemic injury.

Gene Name: IL1A | Your Genotype: CT

Involved in the inflammatory mechanisms, and were reported to be involved in the pathogenesis of stroke and cardiovascular diseases. Act as proinflammatory cytokines contributing to atherogenesis.

Gene Name: PITX2-ENPEP | Your Genotype: CC

PITX2 is a homeobox transcription factor, displaying a specific expression pattern during embryogenesis. Its pivotal role in leftÐright signaling has been unraveled by gain and loss of function experiments. Constitutive deletion of PITX2C and myocardium-specific deletion of PITX2 in mice resulted in a default program for sinus node formation in the left corresponding regions. Additionally, several investigations clarified that PITX2 also plays an essential role in the development of pulmonary vein myocardium. The PITX2 gene encodes a homeobox transcription factor involved in left-right patterning and heart development.

Gene Name: ADRB2 | Your Genotype: CC

This gene encodes beta-2-adrenergic receptor which is a member of the G protein-coupled receptor superfamily. This receptor is directly associated with one of its ultimate effectors, the class C L-type calcium channel Ca(V)1.2. This receptor-channel complex also contains a G protein, an adenylyl cyclase, cAMP-dependent kinase, and the counterbalancing phosphatase, PP2A. The assembly of the signaling complex provides a mechanism that ensures specific and rapid signaling by this G protein-coupled receptor. This gene is intronless. Different polymorphic forms, point mutations, and/or downregulation of this gene are associated with nocturnal asthma, obesity and type 2 diabetes.

Gene Name: HDAC9 | Your Genotype: GG

Histones play a critical role in transcriptional regulation, cell cycle progression, and developmental events. Histone acetylation/deacetylation alters chromosome structure and affects transcription factor access to Diabetic nephropathyA. The protein encoded by this gene has sequence homology to members of the histone deacetylase family. This encoded protein may play a role in hematopoiesis. HDAC9 has been implicated in immune-mediated mechanisms and is expressed in various cell types relevant to atherosclerosis, including inflammatory, vascular endothelial, and smooth muscle cells.

Do's and Don'ts

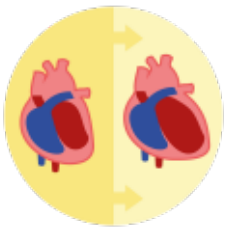
Do's

- Exercise regularly and maintain a healthy weight.
- Manage and control essential parameters such as blood pressure, cholesterol levels, and diabetes.
- Adopt a healthy diet, low in sodium and rich in potassium.

Don'ts

- Avoid smoking.
- Avoid saturated fats and refined sugar.
- Limit consumption of alcohol, tobacco, and salty foods

Cardiomyopathy



What is Cardiomyopathy ?

Cardiomyopathy, also known as heart muscle disease, is a type of progressive heart disease in which the heart is abnormally enlarged, thickened, and/or stiffened. As a result, the heart muscle pumps blood less efficiently, often causing heart failure and backup of blood into the lungs or rest of the body.

5.4

Cardiomyopathy

Interpretation

As per your genotype, you have a typical risk of developing Cardiomyopathy. People with this genotype must include foods with low sugar and salts in their diet and exercise for at least 30 minutes daily to further decrease the risk.

Gene Table

Gene Name: LMNA | Your Genotype: CC

LMNA produces the major lamin A and C proteins, and the minor A?10 and C2 proteins by alternative splicing within exon 10, which are differentially expressed in a developmentally and tissue specific manner

Gene Name: CTLA4 | Your Genotype: AG

Cytotoxic T-lymphocyte antigen-4 (CTLA-4) encoded by CTLA-4 belongs to the immunoglobulin supergene family. The function of CTLA-4 is mainly to transmit inhibitory signals so as to negatively regulate the proliferation of T cells and block the immune responses.

Do's and Don'ts

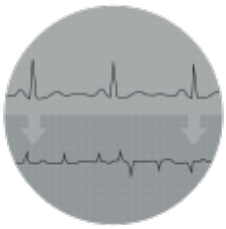
Do's

- Reduce your stress levels and aim to get enough sleep and rest.
- Control your blood sugar level and blood pressure, if you suffer from type II diabetes or hypertension.
- Follow a healthy diet and regular physical activity to avoid any lifestyle diseases.

Don'ts

- Avoid foods with high saturated fats, trans fats, and cholesterol.
- Avoid the overuse of salts (sodium) which can elevate your blood pressure.
- Avoid consuming alcohol and tobacco containing products.

Atrial Fibrillation



What is Atrial fibrillation ?

Atrial fibrillation is a condition in which the heart rate is irregular and rapid, leading to a risk of stroke and other heart conditions.

6.2

Atrial fibrillation

Interpretation

As per your genotype, you have a slightly elevated risk of developing Atrial Fibrillation. Consumption of alcohol and tobacco, along with high blood pressure may also increase the risk.

Gene Table

Gene Name: AGT | Your Genotype: CT

The protein encoded by this gene, pre-angiotensinogen or angiotensinogen precursor, is expressed in the liver and is cleaved by the enzyme renin in response to lowered blood pressure. The protein is involved in maintaining blood pressure and in the pathogenesis of essential hypertension and preeclampsia. Angiotensinogen (AGT) is converted into angiotensin I by renin and subsequently to into angiotensin II, a vasoconstrictor, by angiotensin-converting enzymes. Angiotensin II, a potent pressor substrate, stimulates aldosterone biosynthesis. In the central nervous system, angiotensin II also stimulates drinking and increases vasopressin and adrenocorticotropic hormone

Gene Name: Near PITX2 | Your Genotype: TT

microRNAs (miRNAs) are short (20-24 nt) non-coding RNAs that are involved in post-transcriptional regulation of gene expression in multicellular organisms by affecting both the stability and translation of mRNAs. miRNAs are transcribed by RNA polymerase II as part of capped and polyadenylated primary transcripts (pri-miRNAs) that can be either protein-coding or non-coding. The primary transcript is cleaved by the Drosha ribonuclease III enzyme to produce an approximately 70-nt stem-loop precursor miRNA (pre-miRNA), which is further cleaved by the cytoplasmic Dicer ribonuclease to generate the mature miRNA and antisense miRNA star (miRNA*) products.

Gene Name: PITX2-ENPEP

Your Genotype: CC

PITX2 is a homeobox transcription factor, displaying a specific expression pattern during embryogenesis. Its pivotal role in leftÐright signaling has been unraveled by gain and loss of function experiments. Constitutive deletion of PITX2C and myocardium-specific deletion of PITX2 in mice resulted in a default program for sinus node formation in the left corresponding regions. Additionally, several investigations clarified that PITX2 also plays an essential role in the development of pulmonary vein myocardium. The PITX2 gene encodes a homeobox transcription factor involved in left-right patterning and heart development.

Do's and Don'ts

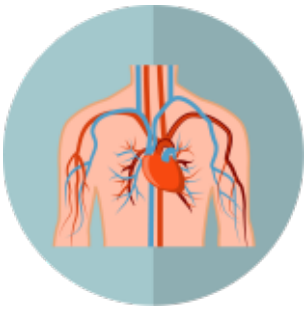
Do's

- Keep a check on your pulse rate as atrial fibrillation is one of the major causes of stroke.
- Include low fat foods, foods with high fiber, whole grains, fruits, and vegetables in your diet.
- Exercise regularly and maintain a healthy body weight.

Don'ts

- Avoid drinking excessive amounts of alcohol and smoking.

Coronary Artery Disease



What is Coronary Artery disease ?

Coronary arteries are the major blood vessel group that supply blood to the heart. Any damage to these blood vessels due to plaque buildup could cause reduced blood supply to the heart leading to Coronary Artery Disease (CAD). Due to decreased blood flow, symptoms such as breathlessness and chest pain can occur. Depending on the extent of blockage, there are several manifestations of CAD like stable angina (chest pain), unstable angina, myocardial infarction (heart attack), and sudden cardiac death (SCD). In case of complete blockage, it could lead to myocardial infarction .

6.2

Coronary Artery disease

Interpretation

As per your genotype, you have a slightly elevated risk of developing Coronary Artery Disease (CAD). Other risk factors include a positive family history of CAD, stress, physical inactivity, smoking and unhealthy diet patterns.

Gene Table

Gene Name: PSRC1 | Your Genotype: AA

This gene encodes a proline-rich protein that is a target for regulation by the tumor suppressor protein p53. The encoded protein plays an important role in mitosis by recruiting and regulating microtubule depolymerases that destabalize microtubules.

Gene Name: MIA3 | Your Genotype: AA

MIA SH3 domain ER export factor 3

Gene Name: TCF7L2 | Your Genotype: CC

This gene encodes a high mobility group (HMG) box-containing transcription factor that plays a key role in the Wnt signaling pathway. The protein has been implicated in blood glucose homeostasis. Genetic variants of this gene are associated with increased risk of type 2 diabetes.

Gene Name: ATP2B1 | Your Genotype: TT

The protein encoded by this gene belongs to the family of P-type primary ion transport ATPases characterized by the formation of an aspartyl phosphate intermediate during the reaction cycle. These enzymes remove bivalent calcium ions from eukaryotic cells against very large concentration gradients and play a critical role in intracellular calcium homeostasis. The mammalian plasma membrane calcium ATPase isoforms are encoded by at least four separate genes and the diversity of these enzymes is further increased by alternative splicing of transcripts. The expression of different isoforms and splice variants is regulated in a developmental, tissue- and cell type-specific manner, suggesting that these pumps are functionally adapted to the physiological needs of particular cells and tissues. This gene encodes the plasma membrane calcium ATPase isoform 1.

Gene Name: CETP | Your Genotype: GG

The protein encoded by this gene is found in plasma, where it is involved in the transfer of cholesteryl ester from high density lipoprotein (HDL) to other lipoproteins. Defects in this gene are a cause of hyperalphalipoproteinemia 1.

Gene Name: Near TGFB1 | Your Genotype: CT

This gene encodes a secreted ligand of the TGF-beta (transforming growth factor-beta) superfamily of proteins. Ligands of this family bind various TGF-beta receptors leading to recruitment and activation of SMAD family transcription factors that regulate gene expression. The encoded preproprotein is proteolytically processed to generate a latency-associated peptide (LAP) and a mature peptide, and is found in either a latent form composed of a mature peptide homodimer, a LAP homodimer, and a latent TGF-beta binding protein, or in an active form consisting solely of the mature peptide homodimer. The mature peptide may also form heterodimers with other TGFB family members. This encoded protein regulates cell proliferation, differentiation and growth, and can modulate expression and activation of other growth factors including interferon gamma and tumor necrosis factor alpha. This gene is frequently upregulated in tumor cells, and mutations in this gene result in Camurati-Engelmann disease.

Gene Name: TTC32-WDR35 | Your Genotype: CC

WDR35: This gene encodes a member of the WD repeat protein family. WD repeats are minimally conserved regions of approximately 40 amino acids typically bracketed by gly-his and trp-asp (GH-WD), which may facilitate formation of heterotrimeric or multiprotein complexes. Members of this family are involved in a variety of cellular processes, including cell cycle progression, signal transduction, apoptosis, and gene regulation.

Gene Name: ADIPOQ | Your Genotype: TT

This gene is expressed in adipose tissue exclusively. It encodes a protein with similarity to collagens X and VIII and complement factor C1q. The encoded protein circulates in the plasma and is involved with metabolic and hormonal processes. Mutations in this gene are associated with adiponectin deficiency. A wide range of anti-athergenic effects of adiponectin is reported. Its genetic deficit could increase the risk of CAD.

Gene Name: CD14 | Your Genotype: CT

The protein encoded by this gene is a surface antigen that is preferentially expressed on monocytes/macrophages. It cooperates with other proteins to mediate the innate immune response to bacterial lipopolysaccharide.

Gene Name: ADTRP | Your Genotype: AA

The protein encoded by c6orf105/ADTRP regulates tissue factor pathway inhibitor (TFPI) mRNA expression and cell-associated anticoagulant activity of TFPI response to androgen. No expression reported in heart.

Gene Name: PHACTR1 | Your Genotype: AG

The protein encoded by this gene is a member of the phosphatase and actin regulator family of proteins. This family member can bind actin and regulate the reorganization of the actin cytoskeleton. It plays a role in tubule formation and in endothelial cell survival. Polymorphisms in this gene are associated with susceptibility to myocardial infarction, coronary artery disease and cervical artery dissection.

Gene Name: HCG27-HLA-C | Your Genotype: AG

HLA-C belongs to the HLA class I heavy chain paralogues. They are expressed in Nearly all cells. The extended MHC, specifically the HLA genes, has been implicated in a wide variety of disorders, including autoimmune thyroid disease, multiple sclerosis, psoriasis, celiac disease, systemic lupus erythematosus and type 1 diabetes.

Gene Name: C6orf10-BTNL2 | Your Genotype: AA

BTNL2: This gene encodes a major histocompatibility complex, class II associated, type I transmembrane protein which belongs to the butyrophilin-like B7 family of immunoregulators. It is thought to be involved in immune surveillance, serving as a negative T-cell regulator by decreasing T-cell proliferation and cytokine release. The encoded protein contains an N-terminal signal peptide, two pairs of immunoglobulin-like domains, separated by a heptad peptide sequence, and a C-terminal transmembrane domain. Naturally occurring mutations in this gene are associated with sarcoidosis, rheumatoid arthritis, ulcerative colitis, inflammatory bowel disease, myositis, type 1 diabetes, systemic lupus erythematosus, acute coronary syndrome, and prostate cancer.

Gene Name: PLA2G7 | Your Genotype: GA

The protein encoded by this gene is a secreted enzyme that catalyzes the degradation of platelet-activating factor to biologically inactive products. Defects in this gene are a cause of platelet-activating factor acetylhydrolase deficiency.

Gene Name: PON1 | Your Genotype: TT

This gene encodes a member of the paraoxonase family of enzymes and exhibits lactonase and ester hydrolase activity. Following synthesis in the kidney and liver, the enzyme is secreted into the circulation, where it binds to high density lipoprotein (HDL) particles and hydrolyzes thiolactones and xenobiotics, including paraoxon, a metabolite of the insecticide parathion. Polymorphisms in this gene may be associated with coronary artery disease and diabetic retinopathy.

Gene Name: HDAC9 | Your Genotype: GA

Histones play a critical role in transcriptional regulation, cell cycle progression, and developmental events. Histone acetylation/deacetylation alters chromosome structure and affects transcription factor access to Diabetic nephropathyA. The protein encoded by this gene has sequence homology to members of the histone deacetylase family. This encoded protein may play a role in hematopoiesis.

Gene Name: CDKN2B-AS1 | Your Genotype: AG

This gene is located within the CDKN2B-CDKN2A gene cluster at chromosome 9p21. The gene product is a functional RNA molecule that interacts with polycomb repressive complex-1 (PRC1) and -2 (PRC2), leading to epigenetic silencing of other genes in this cluster. This region is a significant genetic susceptibility locus for cardiovascular disease, and has also been linked to a number of other pathologies, including several cancers, intracranial aneurysm, type-2 diabetes, periodontitis, Alzheimer's disease, endometriosis, frailty in the elderly, and glaucoma.

Do's and Don'ts

Do's

- Do some form of physical activity for at least 30 minutes.
- Monitor and control essential parameters such as blood pressure, cholesterol levels, and diabetes.
- Eat a healthy, low-salt, and low-fat diet.
- Reduce and manage stress effectively.

Don'ts

- Avoid diets rich in trans and saturated fats.
- Avoid smoking.

Coronary Heart Disease

What is Coronary Heart Disease ?

Coronary Heart Disease (CHD), also called Ischemic Heart Disease occurs when the heart's blood supply is interrupted due to buildup of plaque in the coronary arteries which leads to a state of inflammation and gradual thickening of the coronary arteries and over the time causes the lining of the arteries to get scarred or furred up causing atherosclerosis. Often, CHD is a progression of CAD and atherosclerosis. Symptoms of CHD range from chest pain (angina) to breathlessness. Other symptoms include myocardial infarction (heart attack).

7.1

Coronary Heart Disease

Interpretation

As per your genotype, you have slightly elevated risk of developing Coronary Heart Disease. Smoking, passive smoking, a family history of heart disease among first-degree relatives before the age of 50 could increase one's risk of developing CHD.

Gene Table

Gene Name: TGFB1 | Your Genotype: TC

This gene encodes a secreted ligand of the TGF-beta (transforming growth factor-beta) superfamily of proteins. Ligands of this family bind various TGF-beta receptors leading to recruitment and activation of SMAD family transcription factors that regulate gene expression. The encoded preproprotein is proteolytically processed to generate a latency-associated peptide (LAP) and a mature peptide, and is found in either a latent form composed of a mature peptide homodimer, a LAP homodimer, and a latent TGF-beta binding protein, or in an active form consisting solely of the mature peptide homodimer. The mature peptide may also form heterodimers with other TGFB family members. This encoded protein regulates cell proliferation, differentiation and growth, and can modulate expression and activation of other growth factors including interferon gamma and tumor necrosis factor alpha. This gene is frequently upregulated in tumor cells, and mutations in this gene result in Camurati-Engelmann disease.

Gene Name: MTHFD1L | Your Genotype: GA

The protein encoded by this gene is involved in the synthesis of tetrahydrofolate (THF) in the mitochondrion. THF is important in the de novo synthesis of purines and thymidylate and in the regeneration of methionine from homocysteine.

Gene Name: CDKN2B-AS1 | Your Genotype: AG

This gene is located within the CDKN2B-CDKN2A gene cluster at chromosome 9p21. The gene product is a functional RNA molecule that interacts with polycomb repressive complex-1 (PRC1) and -2 (PRC2), leading to epigenetic silencing of other genes in this cluster. This region is a significant genetic susceptibility locus for cardiovascular disease, and has also been linked to a number of other pathologies, including several cancers, intracranial aneurysm, type-2 diabetes, periodontitis, Alzheimer's disease, endometriosis, frailty in the elderly, and glaucoma.

Gene Name: ALDH2 | Your Genotype: GG

This protein belongs to the aldehyde dehydrogenase family of proteins. Aldehyde dehydrogenase is the second enzyme of the major oxidative pathway of alcohol metabolism. Two major liver isoforms of aldehyde dehydrogenase, cytosolic and mitochondrial, can be distinguished by their electrophoretic mobilities, kinetic properties, and subcellular localizations. Most Caucasians have two major isozymes, while approximately 50% of East Asians have the cytosolic isozyme but not the mitochondrial isozyme. A remarkably higher frequency of acute alcohol intoxication among East Asians than among Caucasians could be related to the absence of a catalytically active form of the mitochondrial isozyme. The increased exposure to acetaldehyde in individuals with the catalytically inactive form may also confer greater susceptibility to many types of cancer. This gene encodes a mitochondrial isoform, which has a low Km for acetaldehydes, and is localized in mitochondrial matrix.

Do's and Don'ts

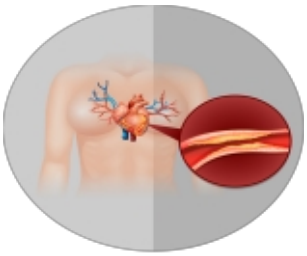
Do's

- Do some form of physical activity for at least 30 minutes.
- Manage and control essential parameters such as blood pressure, cholesterol levels, and diabetes.
- Eat a healthy, low-salt and low-fat diet.
- Reduce and manage stress effectively.

Don'ts

- Avoid diets rich in trans and saturated fats.
- Avoid smoking.

Myocardial Infarction



What is Myocardial Infarction ?

Myocardial Infarction occurs when blood flow to the heart suddenly becomes restricted. Without blood being pumped, the heart does not receive oxygen. If not treated quickly, the heart muscle begins to perish. However, if treated quickly, damage to the heart muscle can be limited or prevented.

6.7

Myocardial Infarction

Interpretation

As per your genotype, you have a slightly elevated risk of developing Myocardial Infarction. People with this genotype must introduce lifestyle changes such as a healthy diet with low saturated fat and high fiber, and regular physical activity to improve blood circulation and heart rate.

Gene Table

Gene Name: LIPA | Your Genotype: CT

The LIPA gene encodes lysosomal acid lipase (LAL), which hydrolyzes cholesteryl esters and triglycerides in the lysosome of cells to generate free cholesterol and free fatty acids [12]. Any alteration of LAL could produce an accumulation of triglycerides and cholesterol esters in the cell, resulting in foam cells and, consequently, in atherosclerotic plaque formation.

Gene Name: CNNM2 | Your Genotype: GG

This gene encodes a member of the ancient conserved domain containing protein family. Members of this protein family contain a cyclin box motif and have structural similarity to the cyclins. The encoded protein may play an important role in magnesium homeostasis by mediating the epithelial transport and renal reabsorption of Mg2+.

Gene Name: JCAD | Your Genotype: GC

JCAD (Junctional Cadherin-5 Associated Protein) gene, previously known as KIAA1462 JCAD is a cellÐcell junctionÐassociated protein expressed in endothelial cells, we speculate that JCAD plays a significant role in angiogenesis. Angiogenesis plays an important role in number of physiological and pathological processes, including atherosclerosis, diabetic retinopathy, tumor growth, and inflammation. Endothelial cellÐcell junctions, critical for vascular integrity and maintenance of vascular function, are regulated by a complex signaling network.

Gene Name: CXCL12 | Your Genotype: TT

Chemokine (C-X-C motif) ligand 12 (CXCL12), also called stromal cell-derived factor-1 (SDF-1), is one of the members of CXC chemokine family [8] and mostly known for its crucial role in the accumulation of smooth muscle progenitor cells (SPCs). It will trigger MAPK and PI3K signal pathway [10] by binding to a G protein-coupled receptor, CXCR4, and contribute to macrophage migration which results from lipid accumulation especially low-density lipoprotein (LDL)

Gene Name: FTO | Your Genotype: AT

This gene is a nuclear protein of the AlkB related non-haem iron and 2-oxoglutarate-dependent oxygenase superfamily but the exact physiological function of this gene is not known. Other non-heme iron enzymes function to reverse alkylated Diabetic nephropathyA and RNA damage by oxidative demethylation. Studies in mice and humans indicate a role in nervous and cardiovascular systems and a strong association with body mass index, obesity risk, and type 2 diabetes.

Gene Name: SMARCA4 | Your Genotype: GG

SMARCA4 gene encodes an ATP-dependent helicase BRG1 and it belongs to SWI/SNF (switching defective/sucrose nonfermenting) complex. SWI/SNF complexes are heterogeneous, BRG1 (also known as SMARCA4) and BRM (also known as SMARCA2) are the only catalytic subunits with ATPase activity.

Gene Name: Near ABO | Your Genotype: TT

ABO blood group system is associated with cognitive impairment2, preeclampsia3, bleeding, neoplastic diseases4, and even longevity. mechanism of relationship between ABO blood group and venous thrombosis is elucidated6, and its major determinants are von Willebrand factor (vWF) and coagulation factor VIII7 which result in thrombosis. This interesting finding makes a theoretical hypothesis that ABO blood group may also be related to risk of coronary artery disease (CAD) and myocardial infarction (MI).

Gene Name: CDKN2A/B | Your Genotype: AG

This gene lies adjacent to the tumor suppressor gene CDKN2A in a region that is frequently mutated and deleted in a wide variety of tumors. This gene encodes a cyclin-dependent kinase inhibitor, which forms a complex with CDK4 or CDK6, and prevents the activation of the CDK kinases, thus the encoded protein functions as a cell growth regulator that controls cell cycle G1 progression. The expression of this gene was found to be dramatically induced by TGF beta, which suggested its role in the TGF beta induced growth inhibition.

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Do's and Don'ts

Do's

- Maintain normal blood glucose levels and take appropriate steps to manage stress.
- Include low fat foods, foods with high fiber, whole grains, fruits, and vegetables in your diet.
- Exercise regularly and maintain a healthy body weight.

Don'ts

- Avoid consumption of tobacco and alcohol as these are major risk factors for myocardial infarction.
- Avoid being physically inactive for long periods of time.