Current Genetic Test: Oct, 1, 2008

This is a test that helps a Physician evaluate a persons future health needs.
It is not a diagnostic test to determine a present moment health disease.
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This is a test that can assist a Physician to determine the propensity a person may have for a disease or a future health condition. This is a predictive genetic test. This test could also assist a Physician discover health strengths a patient may have that would indicate the patient to be less vulnerable to certain health susceptibilities and compromises.

This is the most valuable test a person can have to alert a Physician of the many health challenges a patient may be confronted with in the patients' lifetime. Example: if a patient knows there is a propensity to develop Alzheimer's. This patient and the treating Physician can immediately start searching for methods to delay or seek a cure for the condition before it ever begins its destructive drive; once it is diagnosed it may be too late.

It is irresponsible to deliberately ignore a knowable health weakness. Generally there is a very short window to correct or strengthen a health breach. That's what this test does – it buys a patient time by giving the patient the necessary time to find a correction for the discovered weakness.

1. ChiroGene Scan: A genetic Predisposition examination that reveals potential compromises in health and well-being. This is an extensive DNA analysis, which demonstrates a propensity for more than twenty frequent diseases. This one test will draw the attention of a physician and patient to potential risk of a severe disease and prompting early and effective prophylactic care.
   This test goes further than just exposing a potential health threat. This test will identify the potential functional incapacity of the body, such as:
   A. The body's ability to breakdown waste products and alcohol, which is associated with aging and a predisposition for cancer.
   B. A resistance to HIV
   C. The suitability of hormonal substitution therapy in females
   D. Is coffee congruent with the individual's genome?
   E. ETC.

   This test results in a manual of findings that includes the scientific results of 350 or more important DNA polymorphisms, explanation of terms, methodological instruction for subsequent procedure and a brief background of testing conditions. This is a complex interpretation of a patients DNA, however the report is understandable to a reasonably well-educated lay-person.

This Analysis also Includes:

F. **Myocardial Infarction:** The cardiac health problem in the U.S. Causes 39% of all deaths. 2,566 loved ones die each and every day. Everyone understands the words heart attack, but few people take time to understand

the need to prevent ever having a heart attack. This test helps the doctor determine the chances of a patient actually meeting the consequences of a heart attack. The test carefully checks the role lipids play in metabolism; the genes associated with the regulation of the vascular lumen, and genes that affect blood clotting. A powerful test.

G. **Strokes:** (Cerebrovascular disease) This health threat strikes 780,000 people a year and kills 393.3 people a day. 40% of all living stroke victims suffer through a period of mental depression and most all victims must learn to re acclimate themselves to a new and unfamiliar lifestyle.

However, **silent strokes** (brain hemorrhages) as reflected in population-based studies are shown to be substantially higher than symptomatic strokes. Silent strokes either in the form of infarcts or hemorrhages accounted for 9,040,000, annual actual strokes in the U.S., which poses a potentially severe compromise to health and life.

There are two types of stroke:

1. Ischemic stroke: Brian tissue lacks sufficient blood supply. This is the most common and is due to stenosis or occlusion of arteries due to atherosclerosis. **Ischemia is responsible for 80% of all strokes**.
2. Brain Hemorrhage: which is caused by damaged cerebral blood vessels as a result of high blood pressure or a rupture of a congenital aneurysm.

ChiroGene Scan examines genes that affect important aspects of stroke induction, blood coagulation and vascular function. The physician must recommend preventive measures that will curb the risk of stroke.

H. **Atherosclerosis:** The cause of many Heart Attacks and Strokes. **Affects more than eleven million people a year** and can be the cause of severe pain. The walls of the arteries become thickened and lose their elasticity. This is a chronic degenerative disease of the arteries. The most common type is called atheroma and it is characterized by the formation of plaques inside the walls of the arteries. This condition occurs in the brain (stroke), heart (heart attack) and arteries of the lower extremities called **Ischemic arterial disease** of the lower extremities. In the latter condition, patients complain of intense leg pain on exertion causing a patient to stop walking until the pain subsides. As the disease develops pain occurs at rest and the extremity is cold, there is hair loss, and often-fungal infections. Over a long period of time with insufficient blood supply skin defects begin to appear that won't heal in a timely manner. In a case of complete arterial occlusion the extremity is threatened with gangrene – tissue necrosis and subsequent infection that may require some form of extremity amputation. Cause: The deposition of fat, calcium and other substances in the arterial wall. Lifestyle contributes, but this process is also genetically controlled.

We must understand the process: First changes in the concentration of fatty particles in the blood (increased total cholesterol and "bad" LDL cholesterol levels, low "good" HDL cholesterol levels and high triglycerides). When the internal wall of the artery is damaged because of smoking, high blood pressure, and fatty-particles – lipoproteins penetrate into the arterial wall and the cholesterol crystallizes there. This is what gives rise to the atherosclerotic plaque.

So what happens: Arterial wall gets thick, a decrease in wall elasticity, its lumen gets to small and blood decreases flowing. The organ is then oxygen deficient, nutrient deficient, and toxic and eventually this organ is damaged and may fail.

A ChiroGene Scan analyses studies those genes that participate in the development of atheroscolosis. Especially the genes that focus on lipid fat metabolism, such as, cholesterol and the genes that regulate arterial lumen size.

Lifestyle changes, diet, supplements and sometimes-strong pharmaceuticals may be necessary to bring this chronic condition under control.

I. **Hypertension:** The silent killer. 25% of all adults are suffering with high blood pressure and more than half are completely unaware of the damage being done to their brains, kidneys, lungs, heart and blood vessels. Children from age 6 years old an up should periodically have their blood pressure checked. This condition is very dangerous and is the cause of much destruction in the body.
This test will check the polymorphisms of genes directly involved in the regulation of blood pressure – the rennin-angiotensin system. This will enable the physician to recommend appropriate measures.

J. **Vascular Thrombosis:** Why do we genetically check so many blood related genes? Because so many people die with blood flow related conditions. This test checks eight gene variants, which are capable of determining the potential of a congenital risk of thrombosis very accurately.

<u>This genetic examination is recommended to all girls and women who are</u> considering hormonal contraceptives or are already using them. Hormonal contraceptives used by females with a genetic predisposition to thrombotic complications can lead to complications such as, stroke, and sudden paralysis.

K. Breast Cancer:

This DNA test targets the most serious mutations in the BRCA1 and BRCA2 genes. Plus the serious mutations in genes responsible for the correct repair of damaged DNA that can lead to the development of breast cancer.

Cancer of the breast is the second most frequent cause of death from malignant disease in women.

Predominant cause of breast cancer: Genetic predisposition, hormonal effects, and the influence of diet.

L. Prostate Cancer:

Second biggest killer of men. If diagnosed in time most men live normal lives.

Preventive measures: Avoid all smoke inhalation, well balanced diet, daily physical exercise program, regular sexual activity, do not sit on cold surfaces, and maintain an infection/inflammation free urinary system.

It has been demonstrated that the metabolism of steroid hormones is associated with prostate cancer.

This test examines the genetic qualities of the polymorphisms of genes involved in steroid hormone metabolism.

M. Lung Cancer:

All types of cancer kill 1,532 Americans a day and lung cancer plays a major role in those deaths.

Lung Cancer most often affects patients between the ages 50 and 70.

The reason lung cancer is so dangerous: It produces no symptoms until the cancer cells have divided uncontrollably in the lungs and invaded their surroundings. The first symptoms appear only when there is already massive involvement of the lungs and perhaps metastasized to distant organs.

This genetic test checks the DNA that plays a role in organ detoxification. Early detection is critical.

N. Diabetes:

This test checks only polymorphisms for type 2 diabetes.

This is one of the most expensive and degenerating disorders a person can suffer with.

205.8 people a day die in the U.S of diabetes for a total of 75,119 a year.

Diabetes is the 6^{th} leading killer of Americans.

A person suffering with diabetes loses 13.8 years of productive life due to the complications of diabetes.

16 million Americans wrestle with the disease every day, but only 10.3 million people have been diagnosed with the disease.

The dangerous fact is that 5.7 million people have the disease and don't know they have the disorder.
There are at least 798,000 new cases a year or 2,186 new cases a day coming down with this disease.

The complications from diabetes is horrific: Changes involving the skin, mucosa, eyes, a propensity to infections, vascular disorders that lead to disturbance of blood flow to the extremities and diseases of the cardiovascular system, kidneys, neurological system, vision and etc.

The Physician can easily get an inside look at the susceptibility of a patient potentially suffering such a life threatening fate by understanding from this genetic test where a patients potential genetic weakness' is located and offering the necessary recommendations to prevent the compromise to good health. This DNA genetic test specifically examines the polymorphisms that code the proteins that play a role in glucose metabolism.

O. Obesity:

Obesity starts young – 25% of all American children are now considered either obese or overweight. Upwards towards 70% of all adults are either obese or overweight. It's killing the afflicted person because it helps to bring about many very bad and serious conditions, such as: diabetes, high blood pressure, heart disorders, blood vascular compromises, endocrine stress, lung concessions, self image issues, supportive tissue and bone trauma.
The most important factor in obesity is the amount of energy intake and the amount of energy output.

In minimally 50% of the cases genetic predispositions represent a significant factor. Example if both parents are obese, the probability of the same problem affecting the child is 80%.
There are genetically coded factors that affect the energy equilibrium. When people inherit predispositions they must take better care of their diet.

Knowing the genetic hand we have been given helps to determine the type of food we chose to consume and the amount of energy we must expend.

Diseases play a very small role in obesity, actually less than 1% of obesity is caused by a disease such as hypothyroidism or increased levels of adrenal cortex hormones (Cushing's syndrome), however certain prescription drugs may influence weight gain, examples: antidepressants, tranquilizers, hormonal drugs, and certain types of female hormones.

P. Osteoporosis:

Threatens one out of three women and many older men. Osteoporosis is a condition where the bone mass density becomes severely reduced resulting in fractures. In women estrogen helps the body absorb calcium and maintain bone strength. When estrogen stops or is reduced the likelihood of bone loss increases dramatically.

This special test is for genes that are directly involved in the building of bone matter. The DNA analyses include the gene for type 1 collagen, the gene for the estrogen receptor and the gene for the vitamin D receptor. This test will indicate the actual functioning of all these important genes.

Armed with the genetic information a physician can make sound recommendations, which may include diet adjustments, critically important dietary supplements, exercise regimens, and discontinuance of The use of tobacco.

Q. Alzheimer's:

This disease is the cause of two-thirds of all dementia. At the age of sixty-five 10% of the population suffers from Alzheimer's disease and over age 85 Alzheimer's disease is manifested in over 50% of that population. 196.1 Americans die per day with Alzheimer's. In America Alzheimer's is the 7^{th} biggest killer of our population; however the immediate cause of death usually involves pneumonia or trauma as a consequence of Alzheimer's.
Women are 3.1 times at greater risk then men.

A total of 24 gene polymorphisms are studied in this test/ These 24 genetic components play a significant role in the development of Alzheimer's. Example: It is well understood that there are two key processes that lead to the development of Alzheimer's. One: is the formation of beta-amyloid deposits around neural fibers and two: is the formation of tau-protein that is deposited inside neurons. In both cases, the underlying mechanism involves protein fibers that are insoluble in water and leads to the death of the neuron. Many genes participate in the formation of these protein fibers and that is why it requires such an extensive genetic study to unravel the predisposition.

R. Celiac Disease:

This is an Auto-immune disease where the body manufactures antibodies that attack its own tissues. This process is induced by the protein and gluten contained in wheat, rye, barley and sometimes oats. There is a very high incidence of this disorder,

some reports say one out of every two hundred people suffer with this condition.
If Celiac Disease is not diagnosed and diet corrected this patient is at risk for the following: growth disorders, delayed puberty, frequent abortions, sperm disorders in men, infertility, epilepsy, depression, and after ten or more years of disease duration cancer occurs in 15% of these patients.

The symptoms are extensive: weight loss, diarrhea, vomiting, anorexia, fatigue, bone pain, abdominal pain, weakness, anemia, muscle cramps, moodiness, and Children may complain of lack of concentration, problems with their teeth, problems of growth and development. Untreated Celiac Disease increases the risk of so-called Non-Hodgkin lymphomas (aggressive cancer of the lymph nodes) and colon cancer has been discussed.

The only cure is a gluten-free diet. Early diagnosis is essential and that can best be tested by a genetic test. This one test is saving lives. This genetic test studies the HLA system.

S. Ankylosing Spondylitis:

A chronic inflammatory disease of the musculo-skeletal apparatus that primarily affects the sacro-iliac joint and the vertebral column. The condition begins with progressive stiffening of the low back and ends up in ankylosis of the sacro-iliac joints and the spine (total rigidity).

Ankylosing Spondylitis is an auto-immune disease.

The gene identified as HLA-B*27 allele is identified with this disease approximately 95% of the time. With this test a diagnosis is more certain and if a patient has not manifested any symptoms yet potentially some type of treatment regiment can be initiated to prayerfully stall or prevent ankylosing spondylitis from ever becoming a reality in that patient.

T. Lung Emphysema:

This is a chronic lung disease usually caused by being exposed to toxic chemical environments or by long-term smoking.
In lung emphysema, accumulation of air in the alveoli leads to tearing of the inter-alveolar partitions (septa). This is irreversible.

The importance of this genetic study of a person suffering with this condition is the hope the genes that participate in the liquidation of toxic substances originating from the toxic source are functioning.

U. Macular Degeneration:

The words simply mean the loss of function of those cells that perceive light and that are found in the central part of the retina (in the macula). There are several rare hereditary diseases that may lead to macular degeneration in children and adolescents.

The symptoms: Blurred vision, shadows in front of the eyes or missing sections of the visual field, deformed images, problems recognizing colors and slower recuperation of sight following exposure to bright light.

Causes: Smoking, ageing, familial predisposition, high blood pressure, high cholesterol and solar radiation.

Prevention: Studies of affected families have shown that higher levels of anti oxidants and zinc may decrease the risk of macular degeneration development.
Anti-angiogenic therapy (drugs that block the formation of vessels) has been shown to help. Statin drugs have been used to lower the lipid levels.

Very important: This genetic exam has revealed that 43% to 70% of cases of macular degeneration in the population are caused by polymorphisms of the gene coding factor H plus there is another two genes that contribute significantly to the incidence and development of Macular degeneration.

If this DNA study reveals a disorder of these genes, the patient may receive recommendations regarding dietary supplements that limit and restrict the development of Macular Degeneration. The earlier the predisposition is determined, the more successful can this terrible disease be avoided, of course, with preventive measures.

V. HIV Resistance:

A disease that is transmitted by sexual intercourse, infected needle, or transmission from mother to child during pregnancy, delivery or lactation.

HIV information: The HIV virus has a diameter of 110 nanometers and its genetic information consists of two identical strands of ribonucleic acid (RNA). Within these basic structures a viral particle contains certain enzymes, especially reverse transcriptase, which enables the virus to replicate inside the host cell. HIV is characterized by the ability to incorporate its genetic information in the host cell consequently inducing its chronic life long infection. HIV mainly assails cells of the immune system, especially T lymphocytes with the CD4 receptor. It may infect a number of other cells.

Important: The HIV virus is very insidious. If HIV infects a person, the HIV is capable of rapidly changing so that the immune system is forced to continually endeavor to liquidate the virus.

An HIV person may actually become infected from an HIV person whom he/She has recently infected. The virus mutates so rapidly that it becomes as if another organism and thus an HIV positive person may become infected several times.

There are certain people who do not get infected with the HIV virus and there are some people who have partial immunity. Genetic Scientist discovered certain genes that had certain variants that protected Human Beings from the HIV.

It was discovered that for HIV to enter a cell the virus required the presence of receptors that enable its entry into the cell interior. These receptors require CD4 as well as necessary co-receptors – e.g. CCR5 or CXCR4. But if the co-receptor CCR5 is mutated this will lead to HIV resistance or to a superior prognosis following infection with the HIV virus.

This genetic test does not in any way test for the presence of the HIV virus in a system, but it does test for the resistance factors. This test checks the CCR5 gene for a mutation that will produce a resistance to HIV and a panel of other genetic polymorphisms and mutations of genes that lead to resistance to the HIV virus.

A decreased risk of HIV infection does not mean that the tested person cannot be infected with the HIV virus. But it does indicate that on contact with the HIV the person stands a better chance of remaining HIV negative.

The results of this test can help a health care provider more effectively treat a HIV patient. If the patient is resistant or if patient has no resistance – one needs a tremendous amount of nutritional help, plus prescription drugs the other may need only a small amount of both.

W. Detoxification Abilities of the Body:

The human body is continually being bombarded by harmful toxic elements: It's in the food that we eat, the liquids we drink, and the air that we breathe.

The body fights against these harmful substances with the aid of special enzymes. The efficacy to fight off these harmful chemicals and toxic poisons differ from one individual to another. Persons with damaged or congenitally compromised function of these genetic capabilities run a greater risk of developing cancer and grow older more quickly.

Example: The effect of re-active forms of oxygen (free radicals), which include: hydrogen peroxide or the super-oxide radical which has been shown to play a role in a number of degenerative processes such as: Alzheimer's disease, Ischemic artery disease, Parkinson's disease, or aging. Reactive forms of oxygen are produced inside the mitochondria during a whole range of metabolic processes or during the detoxification of noxious substances.

The negative effect of this re-active forms of oxygen mainly lies in he peroxidation of fats that leads to irreversible damage of cell membranes and potential damage to the cells enzymatic apparatus within the mitochondria plus damage to the DNA bases that may lead to mutations, which can cause a number of diseases including cancer.

The body defends itself against the bad effects of free radicals with mainly the aid of three basic anti-oxidation enzymes:

1. **Catalase:** Responsible for breaking down hydrogen peroxide.
2. **Super-Oxide-Dismutase (SOD):** Breaks down the super-oxide radical and is necessary for the normal biological function of tissue as it prevents damage to the enzymatic apparatus of the mitochondria.
3. **Glutathione-Peroxidase**: Also breaks down hydrogen peroxide with the help of the glutathione co-factor.

Mutations in the genes coding of these basic detoxification enzymes can lead to the increase or decrease of enzyme activity and this activity can increase or decrease the risk leading to oxidative damage of the body. Enzymes containing cytochrome P450, glutathione-S transferase and N-acetyl-transferase play an important part in the detoxification of harmful substances that include potential pro-carcinogens such as polycyclic aromatic hydrocarbons (PAH). Enzymes that contain cytochrome P450 include CYP1A1 and CYP1B1 that play a key role in the first phase of detoxification of potential pro-carcinogens such as PAH or hetero-cyclic aromatic amines (HA) -- example: Cigarette smoke or roasted meat. Another example: it has been shown that in most European countries 10% of the people have a mutation in the CYP1A1 enzyme gene that increase the risk of lung cancer in smokers.

The enzyme glutathione-S-transferase plays a very important role in detoxification by catalyzing the conjugation of a whole range of hydrophobic and electrophillic substances with glutathione. There is several various isoforms of this enzyme, with mutations leading to a decrease in activity or complete deletion, which may increase the risk of cancer or anemia. N-acetyl transferase is then one of a series of enzymes that participate in detoxification of substances whose structure contains nitrogen.

This important genetic test will help the Physician discover what antioxidants and other nutritional supplements to provide for patients. These measures should help to suppress the ageing process and the risk of malignant disease.

X. Pharmacogenetics:

This investigates the genetic ability of a body to respond to prescription drugs. Can the body metabolize the prescribed medication, how fast will the body metabolize the compound or will the metabolizing process be to slow? How will the body react to the prescribed compound? Is the drug dangerous for this patient?

This test gives the doctor information never before possible. For the first time it makes prescribing a pharmaceutical safe.