



GENERENEW™

because genes matter

Health Care Practitioner's Reference Report

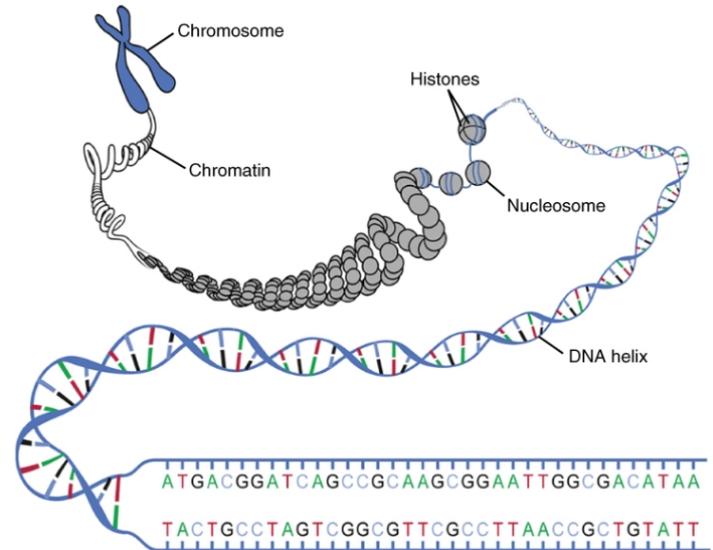
Name	Female	Report Date	2022-03-22
Surname	Case Study	Date of Sample Collection	2016-05-15
Ref Number	00001014	Date Sample Received	2016-05-17
Sample Type	Buccal Swab	Referring Practitioner	Female Case Study
Gender	Female	Estimated Weight	64
Age	49	Estimated Height	1.6
Race	White/Caucasian	Estimated Waist	80
Date of Birth	1971-10-10	Blood Pressure	Normal

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UNDERSTANDING YOUR RESULTS

On average, in terms of DNA, all humans are 99% similar to any other humans. It is the variations in the remaining 1% that makes people unique. Those differences influence a variety of traits such as appearance, behaviour, disease susceptibility or response to medications.

Your results reflect your genetic predisposition for specific characteristics, which may affect your tendencies to weight gain and risk for various diseases. Whether this genetic predisposition come to fruition ('gene expression'), often is influenced by environmental and lifestyle factors. By understanding your genetic makeup, you can identify the impact of environmental and lifestyle influences, such as what you eat and drink, what supplements you take, how you live and how active you are. Thus, knowledge of your genetic profile allows a more efficient approach to your personal health and wellness.



<http://oerpub.github.io/epubjs-demo-book/content/m46073.xhtml>

DNA carries all the genetic information that forms the blueprint for making a living organism. These instructions are written in a language called the genetic code, as shown in the schematic representation above. It's an easy language to learn because it uses only four 'genetic letters': A, C, G and T. Each letter (or base) represents a chemical molecule: adenine (A), cytosine (C), guanine (G) and thymine (T). Just like other languages, the four bases forms 'genetic words' and very long 'genetic sentences' (sequences) that give the body instructions to function. What makes us unique are variations in the 'genetic letters, words and sentences'. These variations can change the function in the body. For example, changing the G to a C in the word Grate, modify the meaning of the new word, Crate, totally.

The majority of your results are reported using these four 'genetic letters'. It is reported in pairs e.g. CT or AG or CC. However, other types of genetic variations exist and are reported as Insertions / Deletions or using other scientific international abbreviations. Due to the complexities of genetics, please discuss your results with a qualified health care practitioner to interpret it for you within your unique circumstances.

Risks & Recommendations

Complex interactions among several genes as well as the environment and lifestyle factors contribute and influence many diseases (e.g. heart disease, diabetes or psychiatric disorders). It requires the input of an accredited health care professional to interpret the results, set priorities and make suitable recommendations within your unique circumstances.

Summaries of the results and key recommendations are set out in this report but necessitates further discussion with the referring health care professional, who received a comprehensive and detailed report.

Based on the online questionnaire and laboratory analysis, several scores are calculated to indicate, among others:

- Risk factors and the severity thereof that are relevant to the gene mutations detected
- Type of diet plan most likely suited for the genetic profile
- Sensitivity to dietary carbohydrates and fats
- Exercise responsiveness

Result Legend

-  The red circle indicates high impact
-  The yellow circle indicates moderate impact
-  The green circle indicates low impact
-  The blue circle indicates no impact

Overview of Current Profile

Personal History

Skin irritations: Occasionally
 Cognitive
 Diabetes
 Fatty Liver
 Thyroid
 Overweight
 PCOS
 Pregnancy Loss
 Sleep
 Allergy: Fish

Family History

Cognitive
 Inflammatory
 Hypertension
 Fatty Liver
 PCOS
 Pregnancy Loss
 Sleep
 Anaemias
 Bone density
 Insulin Resistance

Diet

Fat Intake - High ●
 Folate Intake - Moderate ●
 Fibre & Magnesium Intake - Moderate ●

Physical Activity

Casual, 1 - 2 days a week, 45 min,
 Very low intensity

Lifestyle

Body Mass Index ●
 UV exposure: 4-8 hours ●
 Sunbed: Never/Sporadically ●
 Non-Smoker ●
 Alcohol Consumption - Low ●

Pharmaceutical

Vitamin B-complex
 Protein or other Shake
 Cortisone cream
 Anti-ageing/firming cream



Unfavourable

Favourable

Firmness & Elasticity

Glycation

Antioxidant Capacity

Inflammation & Sensitivity

Detoxification

Cell Renewal & Hair Loss

Pigmentation & UV
 Protection

Recommendations & Comments

Physical Activity

Moderate (30 min/day, 3 times/week) to high physical activity (30-40 min/day, 5 times/week) have a biological anti-ageing advantage of between seven to nine years compared to sedentary individuals. Physical activity is significantly and meaningfully associated with telomere length. Telomeres are protective caps found at the ends of chromosomes. Short telomeres are associated with cell death and (premature) ageing.

Regular Exercise / Physical Activity (<https://umm.edu/health/medical/reports/articles/skin-wrinkles-and-blemishes>)

Diet

Ensure adequate intake of Vitamin B12 and Betaine

Increased need for collagen (eg bone broth)

Nutrients required for wound healing: L-Arginine (9 grams/day), Vit C (>200mg/day), Vit A, Vit E (<400mg/day), Zinc (15mg/day)

Nutrients that influence telomere length: Iron, Omega-3, Vit B12, Vit C, Vit D3 & Vit E

Optimise GST activity with cruciferous & allium vegetables

Zinc, copper and vitamin B12 deficiencies could accelerate greying hair (see report for dietary sources)

Supplements / Nutrients

Antioxidant supplementation eg GENEWAY™ Antioxidant: 2-4 caps/d

Carnosic Acid (Rosemary / Sage extract): 60mg

Curcumin: 500-1500mg/day

Fiber: 4-6g/day, mostly soluble

Glutathione Antioxidant (dosage as per practitioner)

Heavy metal detoxification supplement, if needed

N-acetyl cysteine (NAC) eg ACC200: 600 to 1200mg/day (glutathione precursor)

Omega-3 (DHA/EHA)

Probiotics e.g. GENEWAY™ Probiotic

Selenium offers protection against UV ray exposure and damage

Zinc (during acute inflammation episodes: 50-75 mg/day)

Biomarkers & Clinical

High sensitivity C-Reactive Protein (hs-CRP) (Ideal: <1 - 1.5mg/L)

Vitamin D3 (Ideal 50 - 85ng/ml)

Lifestyle

Avoid cigarette smoke, including secondary smoke

Avoid environmental pollutants

Avoid heavy metal exposure, e.g. Mercury, Aluminum, Lead

Avoid over exposure to the sun

Cosmetic products containing Phloridizin may be beneficial

Ensure sufficient amount of sleep daily (7-9 hours) for better handling oxidative stress

Limit sun exposure 10 min unprotected to midday sun (reduce risk for melanoma wear sunscreen and protective clothing)

Minimise exposure to toxins

Shield your skin against UV rays

Stress management

Pharmaceutical

Antacids, metformin and contraceptives may inhibit dietary absorption of B-vitamins to some extent

Avoid drugs that block folate eg. birth control pills or methyltrexate

Avoid Oxybenzone (read label) - chemical found in cosmetics such as sunscreen, lip balm and moisturizers

Avoid Parabens (read label) - a preservative found in moisturizers, hair care and shaving products

Choose topical creams with 5% to 10% Vitamin C - COL1A1

Ingredients in cosmetics to consider: Phosphatidylserine and Vitamin B12

Use ammonia-free skin care products, including hair colouring agents

Other

Avoid Butylated Hydroxyanisole (BHA) - an additive in certain cosmetics

Avoid coal tar hair dyes, "Fragrance" and 'antibacterial' soaps

Summary of your results

Elasticity & Firmness

MMP1 (2G/2G): Collagen breakdown	●	I/I
COL1A1 (Sp1): Collagen production, scarring & hair loss	●	A/C
COL5A1 (C414T): Collagen production, scarring & hair loss	●	C/T
MMP2 (Gly226Gly): Collagen breakdown	●	C/G
VDR Fok1: Connective tissue breakdown	●	A/G
IL6 (-174 G/C): Skin elasticity	●	G/G
VDR BsmI: Vitamin D requirements	●	G/G
VDR Taq1: Connective tissue breakdown	●	A/A

Cell Renewal & Hair Loss

MTHFR (A1298C): DNA repair & varicose veins	●	G/T
MTHFR (C677T): DNA repair & varicose veins	●	G/A
MTR (A2756G): Skin replenishment	●	A/G
MTRR (A66G): Skin, nails & hair	●	A/G
PAI-1 (4G/5G): Scar formation	●	G/G

Detoxification

GSTM1 (Lys173Gln): Detoxification of chemicals in personal care products	●	ABS
CYP1A1 (Ile462Val): Psoriasis & skin cancer	●	T/T
CYP1A1 (Msp1): Skin barrier (protection) & risk of acne	●	T/T
GSTT1 (Val169Ile): Detoxification of chemicals in personal care products	●	PRS

Inflammation & Sensitivity

TNF (-308 G>A): Risk for acne vulgaris & promoting inflammation	●	A/A
CRP4 (G3872A): "Inflammaging"	●	C/T
AQP3 (C>T): Skin hydration	●	T/T
IL6 (-174 G/C): Pro-inflammatory & anti-inflammatory functions	●	G/G

Antioxidant Capacity

EPHX1 (Tyr113His): Epoxide eg 'fragrance' detoxification & antioxidant ability	●	T/T
SOD2 (Val16Ala): First line defence against oxidative stress, UV protection, risk of skin cancer & acne	●	A/G
CAT (C-262T): Free radical removal & hydrogen peroxide detoxification	●	C/C
GPX (Pro199Leu): Antioxidant protection	●	C/C
NQO1*2 (C609T): Cellular ageing defence	●	G/G

Pigmentation & UV Protection

ASIP (C>T): Melanin production, freckling, melanoma & sun sensitivity	●	C/C
ERCC2 (K751Q): Melanoma risk	●	T/T
MC1R: Ultraviolet protection & sun damage	●	C/C

Glycation

AGER (Gly82Ser): Glucose-induced structural skin damage ('fragile scaffolding')	●	C/C
TCF7L2 (C>T): Skin 'ageing' due to advanced glycation end products (AGEs)	●	C/C

What do the results mean?

Firmness & Elasticity



Your collagen production is slower and the collagen breakdown is faster compared to the population in general, causing an imbalance. Your skin cells tend to be more prone to structural damage that affects elasticity and begins to age faster. Your most important strategy is to restore the lost collagen and maintain it with oral hydrolysed collagen supplementation. Other nutrients that slow down the degradation of collagen are lutein, Vitamins C and E. Vitamin D3 has a key role in collagen maintenance and is produced following exposure to ultraviolet light B (UVB) rays. Vitamin D deficiency is associated with several skin diseases such as psoriasis, atopic dermatitis, vitiligo and can only be recommended as a dietary supplement since Vitamin D does not get absorbed through the skin.

Cell Renewal & Hair Loss



Your overall genetic profile is associated with sub-optimal functioning of the processes involved in cell renewal and repair. These processes are dependent on the active forms of folate and Vitamin B12. Vitamin B is required for DNA synthesis and replication which are crucial for the constantly dividing skin cells. Your genetic ability to activate these vitamins is limited and you are likely to suffer from a 'genetic' Vitamin B deficiency. This put you at risk of premature skin cell death and dermal ageing. You can easily overcome this genetic deficiency since the B-vitamins get readily absorbed via the skin or digestive tract. Cell renewal capabilities furthermore affect scar formation and wound healing. You are likely to benefit using cosmetic products containing ingredients to promote wound healing such as Vitamin C and reduce scarring with silicon gels.

Detoxification



Detoxification is the process of inactivating and/or removing toxic substances from the body. Your body's physiological ability to detoxify is diminished due to genetic mutations detected. Certain chemicals commonly found in personal care products, e.g. oxybenzones, cannot effectively be removed from your body, causing a toxic buildup. The negative effects of this can be diminished by avoiding such chemicals and increasing antioxidant intake. The GST-genes are responsible to produce glutathione, the body's master antioxidant. If one or more of the GST-genes are absent, glutathione production is absent, or significantly diminished and supplementation is necessary.

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Inflammation & Sensitivity



Genetically you have a moderately increased tendency to an overactive immune response to protect against factors such as environmental toxins, allergens and UV rays. This contributes to the overall risk of dermal sensitivity which may make you prone to prolonged redness, eczema, and chemical sensitivity in perfumed products. Arachidonic acid (AA) promotes inflammation and you may need to reduce the intake thereof. AA is mostly found in chicken, eggs and beef. In addition, increase the intake of micronutrients that inhibit inflammation e.g. Omega 3 fatty acids (EPA) or Evening Primrose Oil. The anti-inflammatory organic sulfur, MSM (methylsulfonylmethane), can be absorbed via the skin (e.g. face masks) or digestive tract. Topical products with ingredients such as Aloe Vera and Centella Asiatica are anti-inflammatory.

Antioxidant Capacity



Your natural protection against free radical damage and environmental pollution is impaired. You are thus not adequately protected against free radicals. This leads to faster skin ageing and it is, therefore, necessary to have the right dose of additional antioxidants to provide protection. Alpha lipoic acid (ALA), Coenzyme Q10, Vitamins C and E are powerful antioxidants and can enter via the skin or for digestive track such as with supplement use. Zinc, selenium and manganese are important free radical scavengers but can only be absorbed through the digestive tract.

Pigmentation & UV Protection



Your innate protection against sunburn and UV rays is reduced, whilst the risk of pigmentation (freckles/sun spots) is increased. Your genetic profile is also associated with an increased risk of melanoma (skin cancer). Your tanning ability is moderately reduced and associated with proneness to wrinkles, sun spots and folate loss. You need a daily cream with a higher sun protection factor. In addition vitamins C and E offer protection from UV rays and it is important to replace lost hyaluronic acid. This can be done both externally and internally.

Glycation



The body uses glucose as the main source of energy, but if glucose is not properly metabolised, it binds to collagen and elastin fibers and modifies them structurally and functionally. The resulting products are advanced glycation products (AGEs). Your genotype is associated with a good ability to break down glucose and thus has a typical (normal) risk of forming AGEs, glycation and premature ageing. Glycation is controlled by blood glucose levels and by following a healthy diet you will support this genetic advantage.

SKIN PROFILE

CELL RENEWAL

The ability to form, restore, repair and regenerate cells and DNA.

FIRMNESS & ELASTICITY

The balance between collagen breakdown and synthesis.

GLYCATION

The process in which sugars bind to proteins and fats producing harmful molecules that precedes accelerated ageing.

DETOXIFICATION

The purification and elimination of foreign and harmful compounds.

INFLAMMATION & SENSITIVITY

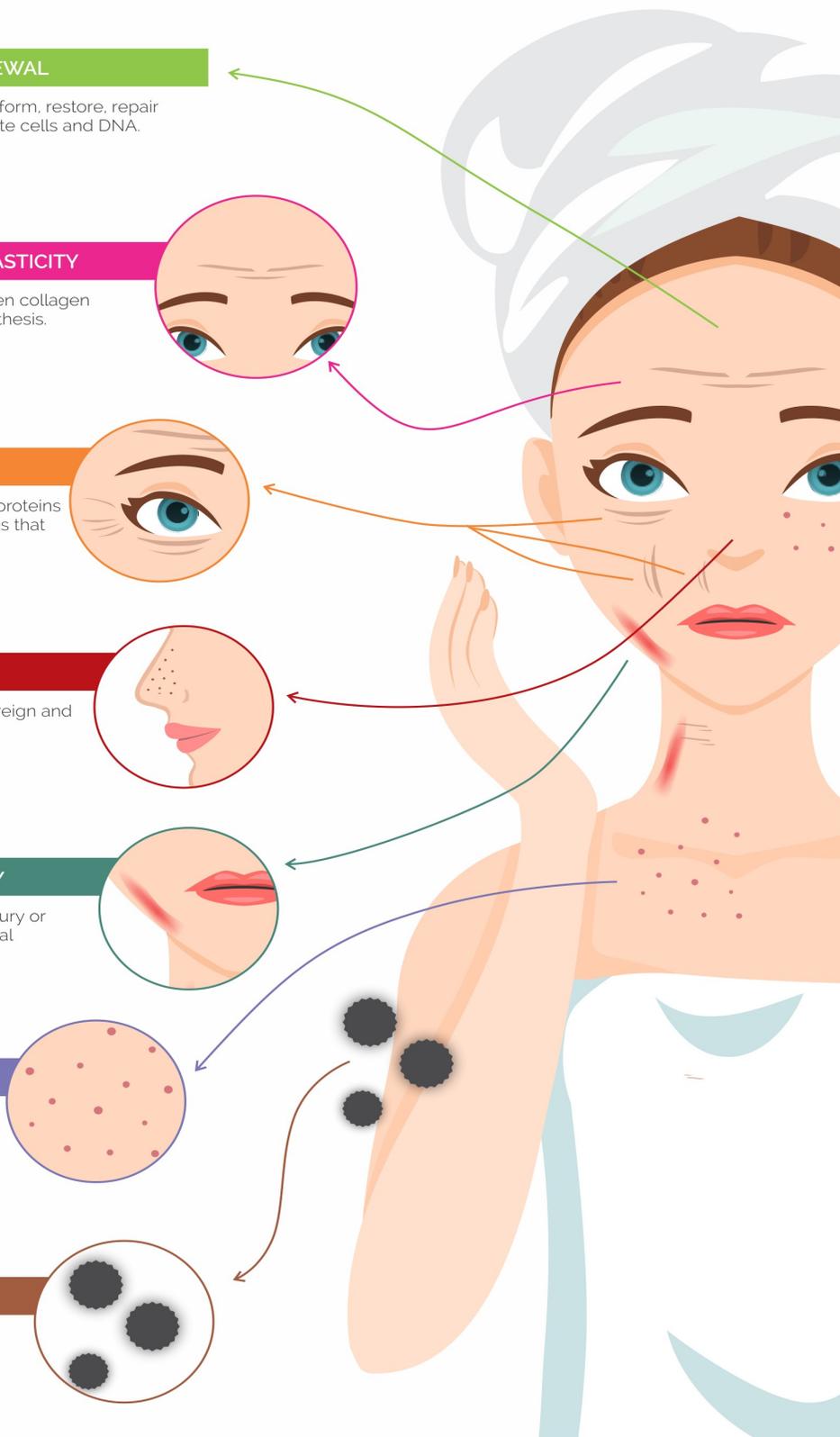
The body's protective response to injury or irritants from both internal and external sources.

PIGMENTATION & UV PROTECTION

The capacity to protect against UV-rays, repair sun damage and regulate pigmentation.

ANTIOXIDANT PROTECTION

The ability to produce essential antioxidants, protect against free radicals and deal with environmental pollutants.



Additional Information

Methodology

SNP (Single Nucleotide Polymorphism) detection takes place using a biomedical technology called polymerase chain reaction (PCR). During this process, a few copies of a piece of DNA are amplified generating an exponential number of copies of a DNA sequence. Variations in the genes, called polymorphisms, are detected and feedback on the possible (disease) associations of these variations are provided in a report format.

Glossary

Amino acids - Organic compounds that combine to form a protein.
 Carrier - An individual who carries gene variants but usually does not display that trait or show symptoms of the disease.
 DNA (deoxyribonucleic acid) - The molecule that encodes genetic information.
 DNA sequence - The relative order of base pairs.
 Gene - The fundamental physical and functional unit of heredity.
 Gene expression - The process by which a gene's coded information is converted into the structures present and operating in the cell.
 Gene product - The biochemical material - either RNA or protein - resulting from the expression of a gene.
 Genome - All the genetic material in the chromosomes of an organism.
 Heterozygote - An individual with two different alleles at one locus (position) on the chromosome pair.
 Homozygote - An individual with two identical alleles at one locus (position) on the chromosome pair.
 Locus (pl. loci) - The position of a gene on a chromosome.
 Mitochondrial DNA - DNA inherited only from your mother.
 Mutation - Any heritable change in the DNA sequence. See also polymorphism.
 Nucleotide - A subunit of DNA consisting of a base: adenine, guanine, thymine or cytosine.
 Polygenic disorders - Genetic disorders resulting from the combined action of alleles of more than one gene (e.g. heart disease, obesity).
 Polymorphism - A difference in DNA sequence among individuals.
 Protein - A large molecule composed of amino acids in a specific order - of which the order is determined by the sequence of nucleotides in the gene coding for the protein.

GENEWAY™ Disclaimer

This report is not a diagnostic tool and is to be used in its totality and in context with the individual's circumstances (e.g. biochemistry, current/historic medical and lifestyle status). The interpretative guidelines provided by GENEWAY™ is based on current knowledge from published research. GENEWAY™ disclaims any liability, loss, or risk incurred consequently, directly or indirectly, from the use and application of any of this material. The possibility of errors in the results due to factors beyond the control of the laboratory may occur. Risk scores are estimations only and require further in-depth analysis. This report was compiled based on the test results provided by GENEWAY™, Silverton Business Park, 354 Derdepoort Road Silverton Pretoria (City of Tshwane) South Africa 0184 | www.geneway.co.za | info@geneway.co.za. Copyright© GENEWAY™ - All Rights Reserved.

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