YOUR DNAFit DIET REPORT

Client Name:	hunter mcintyre
Date of Birth:	-
Sample Number:	hunter_mcintyre
Date of Test:	2016-07-21

DNAFit®
PROFESSIONAL DIET

WELCOME TO YOUR PERSONAL DNAFit DIET REPORT!

Congratulations on taking your DNAFit analysis. Our laboratory has tested your swabs for a selection of key genes associated with diet, nutrition and weight management. It now gives us great pleasure to enclose your unique report, based on your DNA analysis results.

This is isn't just another lab test. Armed with your DNAFit results, it now becomes possible to integrate DNA as a powerful new parameter in the battle for optimum health and fitness, allowing you to further define your own ideal activity and nutrition plan.

NUTRITION JUST GOT PERSONAL

Understanding personal genetics is the exciting new frontier in health and fitness. To fulfil your health or body goals, it is therefore extremely important to make the appropriate choices to best match your unique genetic make-up.

By helping understand how your genetic profile affects you, DNAFit Diet provides unparalleled insight and knowledge to help you make the correct nutrition and diet choices. The important thing to bear in mind, is that this test is non-reactive - your genes don't change. So within this report is an important set of information that you can use for the rest of your life, from just one simple swab!

WHAT YOU WILL LEARN FROM YOUR DNAFit DIET REPORT

From your genetic analysis, we provide a unique genetic deep-dive into the following areas:

- **Optimal Diet Type**
- **Carbohydrate & Saturated Fat**
- **Detoxification Ability**
- **Anti-Oxidant Requirements**
- **Personal Vitamin & Micronutrient Needs**
- **Salt, Alcohol & Caffeine**
- **Lactose Intolerance**
- **Coeliac Predisposition**

UNDERSTANDING GENETICS

To best understand your DNAFit report, we would love you to take just a couple of minutes to read this background information on personal genetics, a kind of 'Genetics 101,' to guide you on how best to make use of what you learn from your DNAFit results.

WHAT IS A GENE?

A gene is a segment of the DNA (short for deoxyribonucleic acid) molecule that contains the instructions for how, when and where your body makes each of the many thousands of proteins required for life. Each gene is comprised of multiple combinations of four letters that make up your genetic code: A, T, C, and G. Each gene combines these "letters" in various ways, spelling out the "words" that specify which amino acid is needed at every step in the process of making the proteins required for your body to develop and function.

WHAT ARE GENE POLYMORPHISMS?

All of us have small differences in the information that our DNA contains, and it's these differences that make each of us unique. Gene polymorphisms are slight changes in the genetic code that are present in at least one percent of the population.

For example - one genetic "letter" (A, T, C, or G) may be replaced by another. These polymorphisms can lead to different processes in the body, just as altering one letter in a word can completely change its meaning. When the change affects only one genetic letter, it is called a "single nucleotide polymorphism" (or SNP, pronounced "snip"). You'll see which of these SNP's you possess under the 'Your Allele Result' in each gene table.

NUTRITION + GENETICS = NUTRIGENETICS

Nutrigenetics is the study of the effects of our individual genetic variations in response to our diet, exercise and lifestyle, all of which can cause the genes to be expressed' in a different way. Nutrigenetics helps us identify how best to progress on our journey towards achieving our own, individual optimal health.

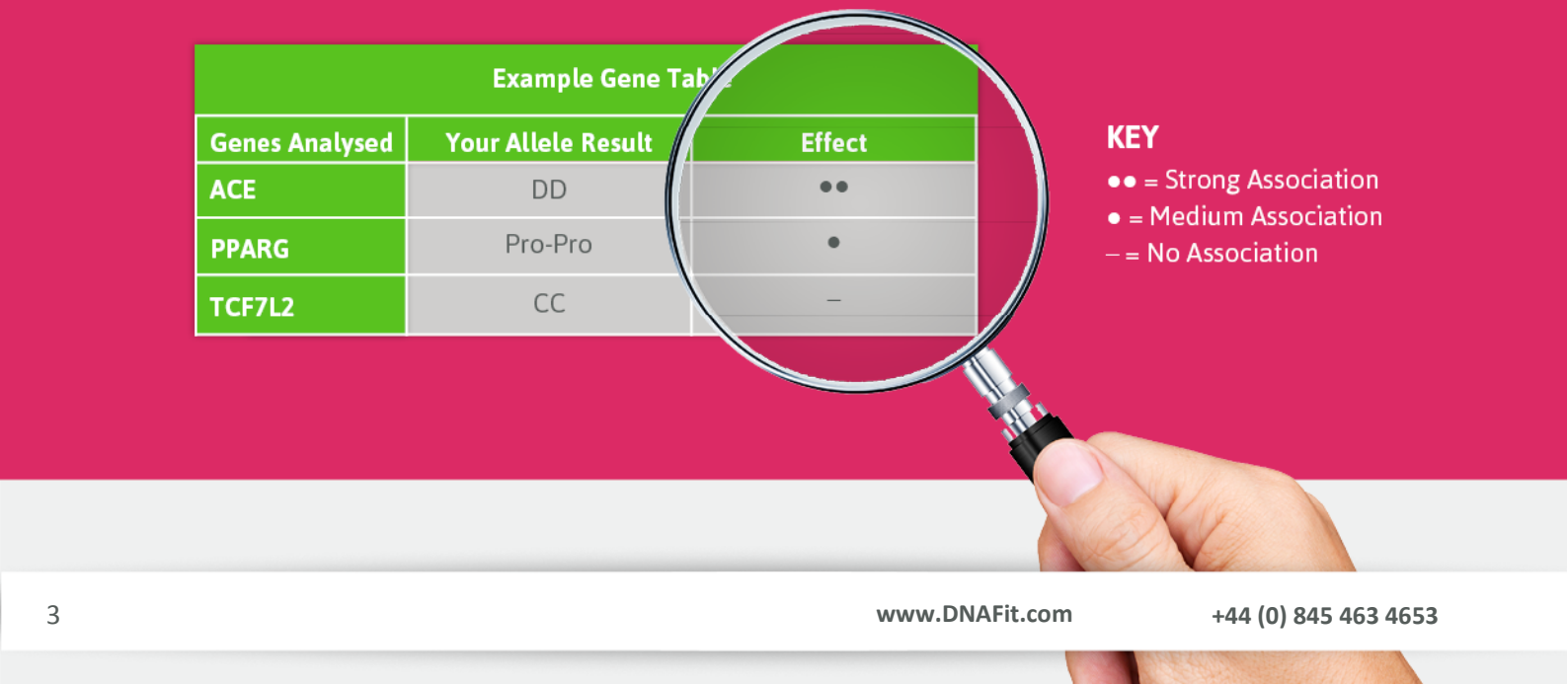
HOW TO READ THIS REPORT

For each key marker in your DNAFit report, we analyse a selection of genetic variants. The variant you hold is known as an allele, and depending on which variation you possess we can report on the strength of its association with each of the DNAFit markers. In each section you'll find your breakdown, as in the table below, to help you understand how your individual genetic profile may affect your health and fitness choices.

Example Gene Table		
Genes Analysed	**Your Allele Result**	**Effect**
ACE	DD	●●
PPARG	Pro-Pro	●
TCF7L2	CC	–

KEY

●● = Strong Association
● = Medium Association
– = No Association



TERMS & CONDITIONS

This report is based on your unique DNA results obtained by testing your swabs for your response to a selection of key genes that are associated with health and fitness.

Any assertions or recommendations in the report as to an exercise regime or diet, whether specific or general, are based on the following assumptions:

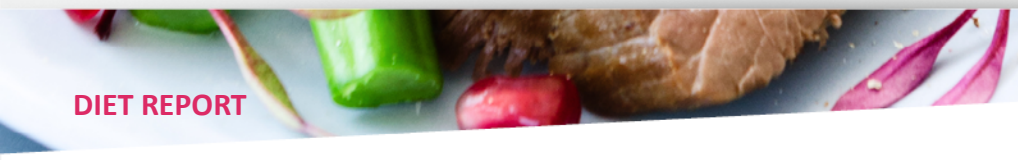
1. that you are in a good state of health and do not have any medical problems that you are aware of;
2. that you have not had any recurring illness in the past 12 months;
3. that no medical practitioner has ever advised you not to exercise;
4. that you are not on any prescribed medication that may affect your ability to exercise safely or your diet;
5. that you do not have any food allergies; and
6. that there is no other reason why you should not follow the assertions or recommendations in the report.

If you have any concerns at any time about whether or not these assumptions are correct in your particular circumstances, before acting, or not acting, on any of the assertions or recommendations, you must consult a medical practitioner.

You are at all times responsible for any actions you take, or do not take, as consequence of the assertions or recommendation in the report, and you will hold DNA Fit Limited, its officers, employees and representatives, harmless against all losses, costs and expenses in this regard, subject to what is set out below.

To the fullest extent permitted by law, neither DNA Fit Limited nor its officers, employees or representatives will be liable for any claim, proceedings, loss or damage of any kind arising out of or in connection with acting, or not acting, on the assertions or recommendations in the report. This is a comprehensive exclusion of liability that applies to all damage and loss, including, compensatory, direct, indirect or consequential damages, loss of data, income or profit, loss of or damage to property and claims of third parties, howsoever arising, whether in tort (including negligence), contract or otherwise.

Nothing in this statement is intended to limit any statutory rights you may have as a consumer or other statutory rights which may not be excluded, nor to exclude or limit our liability to you for death or personal injury resulting from DNA Fit Limited's negligence or that of its officers, employees or other representatives. Nothing in this statement will operate to exclude or limit liability for fraud or fraudulent misrepresentation.



DNAFit PROFESSIONAL DIET

YOUR NUTRIGENETIC REPORT

This report provides your results and any additional information you need to know in order to make informed modifications to your diet and lifestyle to help improve your health and wellbeing. Please read this report carefully and feel free to discuss the report with a nutritionist or health professional, who will be able to help you plan any recommended changes.

Your genes cannot change, but your lifestyle can.

This is why we consider the two together; by identifying genetic traits, we can combine this knowledge with best practice in our lifestyle to make appropriate exercise, dietary and lifestyle recommendations. Bear in mind that genetics is only one of many factors that contribute to our health and wellbeing, as such, for the best results, please use your genetic profile as part of the whole picture, not just in isolation.

A BRIEF OVERVIEW OF YOUR KEY RESULTS

Optimal Diet Type for Weight Management

Mediterranean Plan

Your Recommended Nutrient Overview

Increase	Antioxidants, Vitamin D, Calcium, Cruciferous, Omega 3
Decrease	Salt, Saturated Fats, Grilled meat
Lactose Intolerance	Lactose tolerant
Coeliac Predisposition	Possible predisposition

Individual Food Sensitivities

Salt Sensitivity

Sensitive to salt, <2,200 mg / day sodium

Alcohol Response

Positive effect of alcohol on cholesterol

Caffeine Sensitivity

Fast metaboliser

WE ARE ALL DIFFERENT…

Anyone who has ever tried losing weight will have experienced the dizzying array of diets available, and the often-conflicting advice that they advocate. When starting out on a new weight management program it can be a confusing prospect - the latest 'guaranteed results' diet fad in the media often changes from week to week! Even if the latest craze does actually help you lose body fat for a month or two - will it work long term? Most fad diets will not, and this is why successful weight management is defined as keeping the pounds off for at least 12 months. Following a genotype-based diet has been shown in studies to be a powerful factor in maintaining long term, sustainable weight management goals.

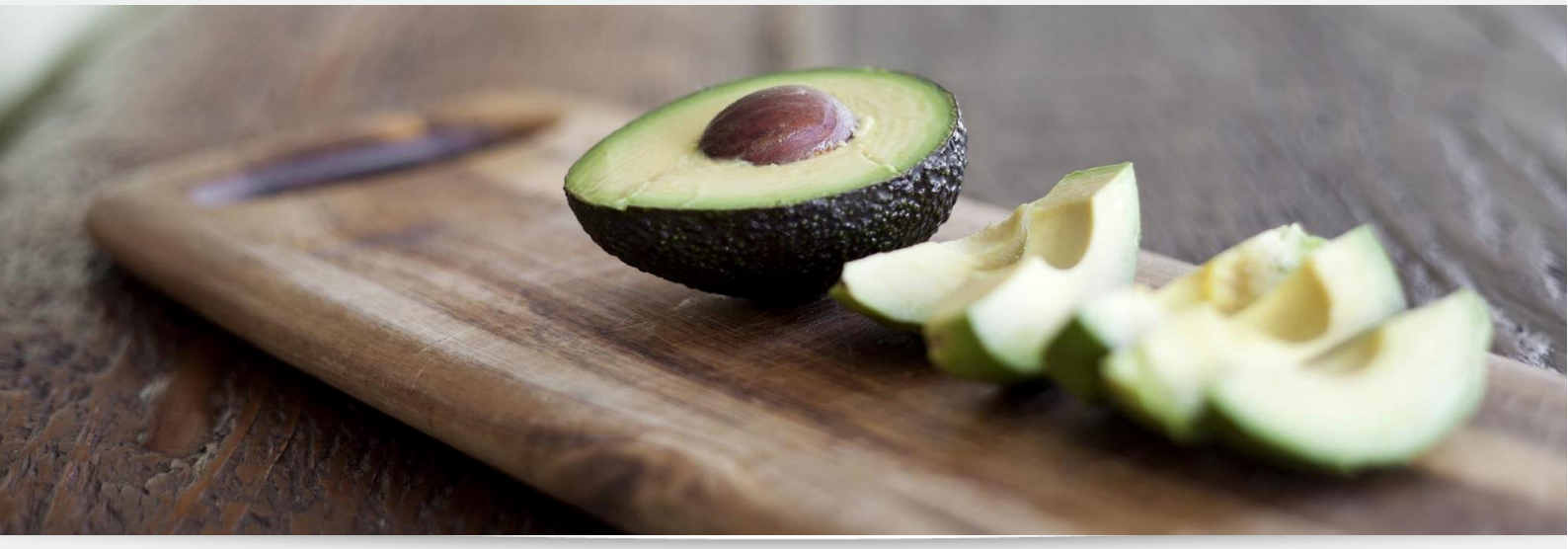
You may have found that a diet that works for someone else is perhaps not so effective for you, or vice-versa. This is a result of a number of factors, from personal preference to lifestyle, but research has also shown that our genetics play an important role in identifying the most effective diet and weight-loss plan for our own bodies. The reality is, **there is no 'one size fits all' nutrition plan,** so using genetics we hope to help light the correct path for *your* body to identify the diet type that works best for you.

Correct diet management obviously does not depend on DNA alone, however, it has now been clearly shown that genetics do impact the way in which different people respond to different diets.

So… let's get started!

What do we mean by 'sensitivity'?

When we refer to your individual sensitivity, we are referring to your body's individual reaction to key macronutrient groups. Depending on your personal genetic profile you may receive a different amount of energy per calorie of both refined carbohydrates and saturated fat, compared to the average. This is important to understand when preparing your eating plan so you can manage your intake of these two food groups for the best possible results.



CARBOHYDRATE SENSITIVITY

What do carbohydrates mean for you?

VERY LOW | LOW | MEDIUM | HIGH | VERY HIGH

Genes Analysed	Allele Result	Effect
ACE	II	-
PPARG	CC	••
TCF7L2	CC	-
ADRB2	CC	-
FABP2	GA	•

You have a **medium-low** sensitivity to carbohydrates – this is an overall measure of the potential effects of your combined genotype on aspects such as carbohydrate metabolism and assimilation, short term glucose fluctuations and longer term insulin sensitivity.

YOUR ACTION POINTS

Consume a maximum of **10** % of your daily calories through refined carbohydrates

Aim for a daily Glycaemic Load maximum of **100**

NOT ALL CARBOHYDRATES ARE CREATED EQUAL

There are two kinds of carbohydrate - Simple, which are broken down quickly by the body and are in foods like sugar, white bread and pastas, and complex, such as brown rice or quinoa, which are broken down into glucose more slowly. When glucose is released too quickly it disrupts the body's blood sugar level, which can then be harmful to your health over the long term, and dramatically affect your ability to manage weight effectively.

Controlling blood sugar levels is associated with a number of positive effects on our health:

- ✓ Lower risk of Type-2 Diabetes
- ✓ Lower risk of cardiac disease
- ✓ Stay fuller, for longer
- ✓ Reduce sweet cravings

WHAT DO WE MEAN BY GI AND GL?

There are many ways to measure how and what we eat, and the different kinds of 'diet' available can be very confusing. At DNAFit we use the Glycaemic Load scale as a start point to help measure not only the type of carbohydrate you take in, but also the total amount.

The GL scale is effectively an evolution of the Glycaemic Index (GI). This is a rating scale that marks the carbohydrate content of a food on a scale from 0 to 100. Foods are ranked according to how much they raise blood-sugar levels after eating - i.e how quickly they are broken down in to glucose during digestion. High GI foods are digested and absorbed quickly, which can result in large and often harmful spikes in blood sugar levels. Low GI foods however are digested and absorbed more slowly, keeping blood sugar levels steady. However, GI does not take in to account the amount of these foods, this is where Glycaemic Load (GL) comes in. Taking into account both the GI of a food, and the amount of carbohydrate content per 100g of this food, the GL to allows a better overall means of dietary guidance.

The higher the Glycaemic Load, the greater the increase in blood sugar.

So, to help maintain long-term health, aim to consume foods with a lower GL to keep your blood sugar levels stable. The total daily GL you should aim for, however, is affected by your individual genetic variants that lower or increase your carbohydrate sensitivity.

Some general tips for following a low-GL diet:

- Always consume whole grains. The fibrous coat of the hull or skin from grains slows down the digestion and absorption of carbohydrates. E.g. Brown rice – this has a much lower GI than white rice.
- Some foods may have a relatively low GI on their own, but are normally served in unnecessarily large portions (Pasta, for example) and as such result in a high GL.
- Aim to eat 'whole' foods - those that are as close to their natural state as possible

Some example foods and their GI & GL scores:

FOOD TYPE	GI SCORE	SERVING SIZE (GRAMS)	GL SCORE
BAKERY PRODUCTS AND BREADS			
Whole wheat bread, average	71	30	9
100% Whole Grain™ bread (Natural Ovens)	51	30	7
Pita bread, white	68	30	10
Wheat tortilla	30	50	8
BREAKFAST CEREAL			
All-Bran™	55	30	12
Muesli	66	30	16
GRAINS			
Couscous	65	150	9
Quinoa	53	150	13
Brown Rice	50	150	16
DAIRY PRODUCTS AND ALTERNATIVES			
Milk, skim	32	250 ml	4
Reduced-fat yogurt with fruit	33	200	11
FRUITS			
Apple	39	120	6
Orange	40	120	4
PASTA AND NOODLES			
Fettucini, average	32	180	15
Spaghetti, wholemeal, boiled	42	180	17
SNACK FOODS			
Rice Cakes	82	25	17
Hummus (chickpea salad dip)	6	30	0
VEGETABLES			
Boiled White Potato, average	82	150	21
Green Peas	51	80	4
Carrots	35	80	2

Want to find out the GL score of more foods? Just search online for "GL Food Table"

SATURATED FAT SENSITIVITY

How your genetics affect the way your body deals with fats

Over the past few decades we've been institutionalised to associate fat intake as 'bad' for us in every way. Science is now however starting to move away from such a simplistic view of fat. We're beginning to understand more and more that dietary fat is not necessarily linked to body fat in such a black and white way. There exist two types of fat – unsaturated and saturated. Fats that are solid at room temperature have a higher amount of saturated fats within them – such as animal fat. An excess of saturated fats in your diet is said to raise cholesterol levels in the blood and therefore it is often recommended that these be monitored as part of a healthy lifestyle.

Scientific research has clearly indicated that genetics play a role in the transport and metabolism of the fat we take on as part of our daily eating, and the resultant effect on some key health factors - our cholesterol level, for example.

Using the genes we tested for your DNAFit report, we can look at two markers associated saturated fat. Firstly, how your body reacts to saturated fat intake in regards to weight management, and secondly how your saturated fat intake affects your overall general health in regards to cholesterol.

1. Fat Sensitivity - Weight Management

Genes Analysed	Allele Result	Effect
ADRB2	AG	-
ADRB3	TT	-
APOA2	CT	•
FABP2	GA	•
FTO	AT	•
PPARG	CC	••
TCF7L2	CC	-

Your combined genotype for lipid related genes indicates a **medium low** sensitivity which affects various aspects including fat absorption from food in the intestines, transport and metabolism and the effect of saturated and unsaturated fats on your blood lipid profile
Consume a maximum of **10**% of your daily calories through saturated fat

2. Fat Sensitivity - General Health

HOW DO SATURATED FATS AFFECT OUR HEALTH?

Fats provide us with a concentrated form of energy. They supply essential fatty acids the body itself cannot produce, help the body store energy, insulate tissues, and absorb fat-soluble vitamins and hormones. Saturated fats can however raise LDL cholesterol levels, and high LDL cholesterol has been linked to cardiovascular disease. The other type of fat to be wary of is known as trans fatty acids or trans fats because they can also increase LDL cholesterol and lower HDL cholesterol, which has been shown to be associated with a number of negative health effects

Genes Analysed	Allele Result	Effect
APOC3	GG	-
APOA2	CT	•
LPL	CC	•
FABP2	GA	•
FTO	AT	•

Many studies have demonstrated the effects of genetic variation on transport and metabolism of dietary saturated and unsaturated fats. The processes affected involve absorption through the intestine, transport in the blood, storage and conversion into energy. Research on the interactions between nutrition, lifestyle and genetics has clearly demonstrated that the effects of these genetic variants that can modify your lipid profile, raising / lowering cholesterol for example, depend on environmental factors and in particular the type and quantity of fats in your diet. The genes selected in this panel have an additive effect and a sensitivity score has been determined which can be used to modify your diet in a beneficial way.

Your combined genotype for lipid related genes indicates a **medium low** sensitivity which affects various aspects including fat absorption from food in the intestines, transport and metabolism and the effect of saturated and unsaturated fats on your blood lipid profile.

ACTION POINTS

Based on the combined genotype of all genes related to lipid metabolism we offer the following nutritional advice:

- Saturated fat = max **10**% total calories
- Monounsaturated Fatty Acids = 15% total calories
- Polyunsaturated Fatty Acids = 12% total calories

DETOXIFICATION ABILITY

We are mostly familiar with the press and media referring to 'detox' as various extremely restrictive short-term diets, such as consuming only fruit juice for a few days. However, in your DNAFit report, when we refer to detoxification we are referring to the body's actual biological process that takes place in the liver. This happens in two phases, but depending on our personal genetic profile the two phases interact with each other differently and affect our personal ability to detoxify harmful chemicals taken on in our diets. The good news is that by understanding our own personal need for certain food types based on these genes, we can effectively cancel out any impaired detoxification ability we may have.

Phase 1 - Risk of DNA Damage from Smoked / Chargrilled Meat

Cooking certain meats at high temperatures creates the formation of chemicals that are not naturally present in uncooked meat. Some of these chemicals, known as HCA (Heterocyclic Amines) and PAH (Polycyclic Aromatic Hydrocarbons), are regarded as toxic compounds that can damage DNA and protein in our cells, possibly leading to serious health problems in the long run. Foods cooked at very high temperatures or for a very long time create the highest levels of these chemicals, so be aware of your consumption.

YOUR GENETIC DETOX ABILITY - Phase 1

Genes Analysed	Allele Result	Effect
CYP1A2*1F	AA	••
EPHX1	TT	••

Your genetic result for this gene (A/A) mean that you have two copies of the rapid version of the enzyme, which activates more rapidly potentially toxic substances present in meat cooked at high temperatures. The 'T' version of the EPHX1 gene codes for the fast activity enzyme. With these results it is advisable to limit your consumption of grilled or smoked meat to 1-2 servings per week.

DETOXIFICATION ABILITY

Phase 2 - Cruciferous Vegetable Requirements

After Phase 1, the body needs Phase 2 to 'finish the job' of detoxification. Two genes exist that affect the second phase of the detoxification process, GSTM1 and GSTT1. However, in some people these genes are not actually present. Luckily, with adequate intake of the correct vegetables, we can all but cancel out the lack of these genes. Vegetables such as cabbage, cauliflower and broccoli are known as "Cruciferous" vegetables. These vegetables promote your body's natural ability to remove dangerous toxins created in Phase 1. So even if you have the 'deleted' version of the detoxification genes below, getting enough cruciferous vegetables means you'll be in good stead when it comes to detoxification

Genes Analysed	Allele Result	Effect
GSTM1	D	••
GSTT1	I	-

You have the D (deleted) version of the GSTM1 gene which means that no GSTM1 enzyme is produced. You can compensate by adding extra portions of cruciferous vegetables and consume on average at least 3-4 portions per week. It is also recommended that you add frequent consumption of allium vegetables (garlic, onions, etc) to your diet.

ANTI-OXIDANT NEED

Anti-oxidants are molecules found in fresh foods such as vegetables and fruit; they play a part in reducing the effects of harmful molecules called “Free Radicals” which are responsible for tissue ageing, DNA damage and even contribute to some diseases. In short, free radicals are harmful to our general health, so we try and clear them out as much as possible.

The good news is that a diet rich in anti-oxidants can help reduce the damage free radicals cause. Our genes can show us how strong our natural protective systems are for removing free radicals, and from this we can change our diet accordingly. Those with lower natural ability to protect against free radicals should deliberately increase their intake of anti-oxidant foods. Interestingly, a large study that was recently published by Newcastle University showed that organic crops contained up to 60% more key anti-oxidants than non-organically farmed crops. If you have a raised genetic need for anti-oxidants, eating organic fruit and vegetables is a great way to get started.

YOUR ANTI-OXIDANT NEED

NORMAL RAISED

Genes Analysed	Allele Result	Effect
SOD2	CT	•
CAT	CC	-
GPX1	CC	-

Increase antioxidants
Your genetic test results indicate the possibility of a moderately reduced capacity to neutralise free radicals. Dietary anti-oxidants are very important sources of protection from free radicals and other types of oxidative stress. In order to support your body’s own protection mechanism it is important for you to ensure that you reach your goals for vitamins A, C and E and selenium.

Why are vitamins A, C, E important for our health?

Vitamins are made up of organic molecules essential for normal metabolism, growth and cell function. Because our bodies generally can’t create vitamins, it’s important to aim for adequate vitamin intake in our diet. As part of a healthy eating plan, we advise plenty of foods that are rich in Vitamin A, C and E to lessen the effects of oxidation.

- Some example foods rich in Vitamin A are dark leafy greens such as Kale and Spinach
- Vitamin C can be found in citrus fruits, broccoli and chili peppers
- Almonds, avocados and sunflower seeds are great sources of Vitamin E

OMEGA-3 NEED

What are Omega-3 Fatty Acids and why are they good for our health?

Omega-3 fatty acids are a type of unsaturated fat, often referred to as essential fatty acids because our bodies need them to function normally. We don't naturally manufacture these within our body so it's very important we take in enough omega-3 as part of our diet. There are many health benefits associated with Omega-3 fatty acids, including amongst others, lowering blood fats, helping reduce rheumatoid arthritis and having an effective anti-inflammatory affect.

We test for two genes that can influence your body's inflammation levels. From these results we can make recommendations about your individual need for dietary Omega-3s. Those with a higher natural inflammatory response are advised to increase their daily allowance of Omega-3 rich foods to help combat this raised inflammation.

YOUR OMEGA-3 NEEDS

Genes Analysed	Allele Result	Effect
IL6	CC	••
TNF	GG	-

Increased basal inflammation: 3 g Omega 3 / day
Your results show that you have normal expression for TNF but are homozygous for the version of IL6 (C/C) which can lead to increased cytokine levels. Your recommended intake of Omega 3 is greater the official guidelines at 3 g per day from food and a good quality supplement.

DNAFit Tips

Oily fish such as Salmon, Sardines and Mackerel are a great source of Omega-3

Dress your salads with walnuts and flax seeds - a tasty way to increase your Omega-3 intake

Plan to eat between 2-5 servings of omega-3 rich foods per week

VITAMIN B REQUIREMENTS

How the MTHFR gene affects your health

When we say 'Vitamin B,' we are actually talking about a group of eight vitamins in total. Our nervous system, digestion and red blood cells depend on the B vitamins to maintain normal function in our day-to-day life, from how our body uses our food to create energy to forming red blood cells. The MTHFR gene is well characterised for its role in the utilisation of folic acid and vitamins B6 and B12. Some people have a version of this gene that means they might need to increase their intake to maintain optimum health and this is reflected in your personal recommendation for these vitamins.

A lack of enough B vitamins in our diet puts us at risk of diseases like anaemia.

YOUR VITAMIN B NEEDS

NORMAL RAISED

Genes Analysed	Allele Result	Effect
MTHFR	CC	-

Standard recommendations Vitamin B

You have the 677C/C version of the MTHFR gene which produces an enzyme with normal activity. Your diet should contain sufficient amounts of folic acid and the other B-group vitamins to ensure that you at least reach the official recommended daily intake.

DNAFit Tips

Folate can be found in high doses in offal, such as liver.

Other good sources of folate are beef, lamb, pork, avocados, whole grains and dark green leafy vegetables such as spinach.

Vitamins B6 and B12 are found naturally in foods such as asparagus, chickpeas, egg and peanuts.

VITAMIN D REQUIREMENTS

The VDR Gene

Vitamin D helps us maintain normal blood levels of calcium and strengthens our bone structure. Although it is found in certain foods, our skin also creates vitamin D when we are exposed to sunlight! Though for many of us living in colder climates, taking in enough sunshine each day is unfortunately not possible. Without adequate vitamin D, we may be at increased risk of osteoporosis and several other pathologies related to the functions of this important vitamin.

The gene VDR is known as the Vitamin D Receptor, variations in this gene have been related to individual differences in vitamin D requirements. Below you'll find out which version of the VDR gene you hold, and how it affects your vitamins D needs.

YOUR VITAMIN D NEEDS

Genes Analysed	Allele Result	Effect
VDR	CT	•

Increase: 800 IU / day Vitamin D
You are heterozygous for this gene (C/T) which has been shown to affect calcium absorption and bone structure. You are advised to increase consumption, above the standard guidelines, to obtain at least 800 IU Vitamin D and 1300 mg Calcium.

DNAFit Tips

The body makes its own Vitamin D when exposed to sunshine, so try to get at least fifteen minutes of sun three times a week… or whenever the weather allows!

Resistance exercise, such as lifting weights in the gym, is useful for promoting bone growth.

Fortified foods (those with added vitamins) are the major dietary sources of vitamin D - commonly breakfast cereals and milk.

Oily fish is another good source of dietary Vitamin D

SALT, ALCOHOL & CAFFEINE SENSITIVITY

Some of us are more sensitive to certain dietary ingredients than others. Salt, alcohol and caffeine are some of the most common ingredients in our daily life.

Thanks to genetic testing we can now help identify those with higher sensitivities to salt, alcohol and caffeine. By understanding our own individual sensitivity to these ingredients, we can make informed choices about our own personal intake

SALT SENSITIVITY

How does your sodium intake affect your health?

Salt is made up of Sodium and Chloride, for health reasons we are mostly concerned with our sodium intake as it can cause high blood pressure in those who are genetically susceptible. Commercial foods that we buy from the supermarket often include large amounts of hidden sodium, before we even add salt to our cooking ourselves. As such, it is a good idea for all of us to be aware of how much salt we take in on a daily basis. Thanks to personal genetics, we can now identify those who have to be extra careful with their sodium intake.

SODIUM SENSITIVITY

NORMAL **RAISED**

Genes Analysed	Allele Result	Effect
ACE	II	••
AGT	TT	-

Sensitive to salt, <2,200 mg / day sodium
Your genetic tests reveals that you have the "I/I" and Met/Met genotype and therefore a possible predisposition to hypertension when salt (specifically sodium) consumption is excessive. You are advised to limit your salt intake to a maximum of 5.5g/day, equivalent to about 2.2g/day sodium.

DNAFit Tips

Always taste your food before adding salt; you may not actually need the extra salt!

Look for hidden salt in pre-packaged food at the supermarket; sodium levels are often surprisingly high.

Consider adding herbs or spices to your food to enhance the flavour without extra salt

ALCOHOL RESPONSE

How your genetics affect your body's response to alcohol

It's common knowledge that excess alcohol is harmful to our health, and no gene result can change this! Our genes are not going to tell us either eliminate alcohol altogether or to drink as much as we like. However, a certain version of the ADH1C gene has been shown to have a positive effect specifically on HDL cholesterol levels (which is a good thing), but with *moderate* alcohol consumption only.

ALCOHOL RESPONSE

Genes Analysed	Allele Result	Effect
ADH1C	AG	-

Positive effect of alcohol on cholesterol
Alcohol dehydrogenase 1C (ADH1C) metabolises alcohol, creating acetaldehyde which is a toxic substance responsible for some of the negative effects of excessive alcohol consumption. Acetaldehyde is itself metabolised by aldehyde dehydrogenase into non-toxic substances. The ADH1C gene polymorphism screened in DNAFit causes an amino acid change in the protein sequence which affects enzyme activity.

The test results show that you are heterozygous for the Val (Valine) allele (genotype A/G) which is characterised by the presence of valine at a specific position in the protein. Valine results in a lower activity enzyme which metabolises alcohol more slowly compared to the "Ile" genotype (presence of the amino acid Isoleucine) and is associated with higher levels of the "good" cholesterol, HDL in moderate drinkers (up to 3 units per day). Moderation is also advised because alcohol is metabolised more slowly.

DNAFit TIPS

A unit of alcohol is defined as:

Half a pint of normal strength beer or lager
1 small (125ml) glass of wine (9% Alcohol)
1 single shot (30ml) of sherry (17.5% Alcohol)

CAFFEINE SENSITIVITY

How does your body metabolise caffeine?

Caffeine is the most common stimulant we ingest on a regular basis. As we all know, we primarily get our caffeine from coffee, but also from energy drinks, tea and even certain medicines. While a moderate amount of caffeine is usually harmless, in some people excessive caffeine intake can cause anxiety, insomnia, headaches, and stomach irritation. For some people, excess caffeine intake has also been linked to high blood pressure.

Excessive caffeine intake can also be detrimental to bone health as it can prevent the absorption of vitamins and minerals in our system. There are certain gene responses that research has shown to play a role in metabolising caffeine and removing toxins, and from these results we can provide recommended upper limits of caffeine intake based on individuals genetics.

CAFFEINE SENSITIVITY

Genes Analysed	Allele Result	Effect
CYP1A2*1F	AA	-
VDR	CT	•

CYP1A2 codes for a Cytochrome P450 enzyme that is involved in Phase I (activation) of removing toxins, such as carcinogens from food and smoke, it also metabolises caffeine. Interactions have also been reported for the vitamin D receptor (VDR) which may affect the influence of caffeine on bone mineral density.

Your genetic result for CYP1A2 (A/A) mean that you have two copies of the rapid version of the enzyme and you should keep within recommended guidelines for caffeine consumption

Your VDR genotype has not been reported to influence the effect of caffeine on bone health

DNAFit TIPS

Remember that caffeine is also found in many teas, energy drinks and even some medicines.

To cut down on your caffeine consumption, consider drinking more herbal teas in place of everyday tea.

The drink with the highest caffeine concentration is filter or drip coffee, with between 115-135 milligrams per small cup.

LACTOSE INTOLERANCE

The Lactose Persistence Gene

Lactose is a sugar that is found naturally only in milk, however nowadays we often find it everywhere, in almost all processed foods. Lactose is digested in the body by an enzyme called lactase. In the majority of the world's population, the enzyme lactase is only produced for a few years of early life. As far as evolution is concerned, we only need it while we feed on our mother's milk – so as a result most of the world's population are lactose intolerant. This is not a disease, nor is it too serious, but it does mean that lactose is not digested as normal, but instead is fermented by gut flora - creating gas that can cause discomfort, pain and diarrhoea. However, a few thousand years ago a genetic mutation appeared in central Europe in the lactase gene, which meant that the gene stayed active all through life – creating lactose persistence. After a few generations it became a common and selected for mutation, as dairy became an increasingly important part of central European life. Your results here will tell you if you possess one or both versions of the lactose persistence gene.

LACTOSE INTOLERANCE

Genes Analysed	Allele Result	Effect
LCT	CT	-

Your Result, CT, means that you have inherited one copy of the version of the gene (T) that leads to lactase persistence and an ability to continue to digest lactose from dairy products.

Coeliac Predisposition

How common is coeliac disease for your genotype?

Coeliac disease is a relatively common digestive condition that occurs when a person has an adverse reaction to gluten, a protein found in grains such as wheat, barley and rye. For those with coeliac disease, eating gluten can create an immune reaction in the small intestine, causing a wide-range of symptoms from diarrhoea to malnutrition.

Around 1% of the population on average are affected by coeliac disease, and require lifelong complete avoidance of gluten. The condition is also severely under diagnosed - in Europe and the USA about 80% of people with coeliac disease do not even know that they have it. The seriousness of coeliac disease is mainly due to this under diagnosis. Living with coeliac disease but without knowing it means living with a damaged intestine which cannot absorb all the micronutrients from food that it needs to – this in turn causes a sort of mild but chronic malnutrition which in the long term (decades) increase incidence of diseases like osteoporosis and cancer. When coeliac is diagnosed it is not a problem, as long as gluten (which anyway did not exist in our diet until about 15,000 years ago) is avoided.

Variants in the HLA gene can raise or lower the genetic predisposition to coeliac disease, and with certain cases can virtually eliminate the risk of coeliac altogether.

Genes Analysed	Allele Result
HLA DQ2/8	DQ2.5

Possible predisposition
The results of your genetic test reveal that, even though the risk is not high, it is not possible to exclude a predisposition to Celiac disease. According to the scientific literature 1 person in 35 with your genotype result will develop celiac disease while the average is 1/100.
A positive genetic test result does not mean that you will certainly develop celiac disease and it is not a reason for you to avoid gluten unless an intolerance has actually been diagnosed.

YOUR OVERALL NUTRIENT SUMMARY & GUIDELINES

Here is a summation of all the key vitamins, minerals and nutrients we are able to recommend based on your individual genetic results, and how they compare to the current EU guidelines. Where both columns match, your genes show no need to increase intake above the normal EU recommended daily allowance.

Nutrient	Current EU RDA	Your goal per day
Vitamin B1	1.2 mg	1.2 mg
Vitamin B3	18 mg	18 mg
Vitamin B5	5 mg	5 mg
Vitamin B6	1.5 mg	2 mg
Vitamin B7	30 µg	30 µg
Vitamin B9	400 µg	400 µg
Vitamin B10	25 mg	25 mg
Vitamin B12	2.4 µg	2.4 µg
Vitamin A	2,350 IU / (700 µg)	5,000 IU / 1500 µg
Vitamin C	85-105 mg	250 mg
Vitamin D	600 IU / (15 µg)	800 IU / 20 µg
Vitamin E	15 IU / (13.5 mg)	200 IU / 180 mg
Vitamin K	140-170 µg	140-170 µg
Inositol	30 mg	30 mg
Choline (Vit J)	200 mg	200 mg
Fibre	25 g	25 g
Omega-3	1.6 g	3 g
Chromium	30 µg	30 µg
Calcium	1000 mg	1,300 mg
Selenium	75 µg	75 µg
Phosphorus	700 mg	700 mg
Iodine	150 µg	150 µg
Iron	14 mg	14 mg
Magnesium	240 mg	240 mg
Potassium	3.9 g	3.9 g
Sodium	2.4 g	2.2 g
Copper	0.9 mg	0.9 mg
Zinc	11 mg	11 mg
Caffeine	300 mg	300 mg
Saturated Fats	22 g	16 g

INTERESTED IN HOW YOUR GENES AFFECT YOUR FITNESS TOO?

Did you know that your genetics also play an integral role in choosing the most effective way for you to exercise?

We know that diet alone is not the whole picture when it comes to managing our weight effectively. Living an active lifestyle and doing the right amount of exercise play an extremely important part in keeping us fit and healthy. However, just as is the case with nutrition, there is no 'one size fits all' approach to the most effective training plan either - our genetics affect which training methods work best for us.

As an existing DNAFit Diet customer, you can upgrade your report to include our full DNAFit Fitness Premium test for a discounted price - with no re-swab needed!

With the DNAFit Premium test reports you'll learn the following genetic information:

- **POWER / ENDURANCE GENETICS**
- **AEROBIC POTENTIAL (VO2 MAX RESPONSE)**
- **RECOVERY SPEED**
- **INJURY RISK**

Get in touch with us today on info@dnafit.com or call us on +44 (0) 845 463 4653 to upgrade your results now!

GLOSSARY

Aerobic:
Anything relating to, involving, or requiring oxygen. E.g. "Aerobic exercise"

Allele:
An allele is an alternative form of a gene (one member of a pair) that is located at a specific position on a specific DNA chromosome. E.g. "You have the DD alleles of the ACE gene."

Anti-Oxidant:
A substance, such as vitamin E, vitamin C, or beta-carotene, thought to protect body cells from the damaging effects of oxidation.

Cruciferous Vegetables:
Relating to or denoting plants of the Cruciferae or Brassicaceae family, valued for their health benefits.

Endurance:
A sport or activity that requires the ability to perform for long periods of time at low intensities, such as marathon running and cross-country skiing.

Free Radical:
An atom or group of atoms that has at least one unpaired electron and is therefore unstable and highly reactive. In human tissue, free radicals can damage cells and cause health problems.

Folate:
A salt or ester of folic acid.

Folic Acid:
Part of the B complex of vitamins, found especially in leafy green vegetables, liver, and kidney.

Genotype:
The genetic constitution of an individual organism.

HCA (Heterocyclic Amines) and PAH (polycyclic aromatic hydrocarbons):
Possibly harmful chemicals formed when meat is cooked at high temperatures.

Lipid:
Any of a group of organic compounds, including fats, oils, waxes, sterols, and triglycerides, that are insoluble in water.

Micronutrient:
A substance such as a vitamin or mineral, that is essential in small amounts for our body's health and growth.

Monounsaturated Fatty Acids:
A type of fat that has only one double bond per molecule, they are mostly liquid at room temperature but can turn solid when chilled. E.g. Olive Oil

Nutrigenetics:
A branch of nutritional science, which investigates the effect of genetic variations on the individual response to nutrients and other dietary components.

Osteoporosis:
A medical condition in which the bones become brittle and fragile from loss of tissue, typically as a result of hormonal changes, or deficiency of calcium or vitamin D.

Polyunsaturated Fatty Acids:
A type of fat that has more than one double bond per molecule, they are typically liquid both at room temperature and when chilled.

Power:
A sport or activity that requires the ability to perform at a high intensity for short periods of time, such as sprinting and power lifting.

Tendinopathy:
A chronic or acute injury to a tendon, such as the Achilles tendon, often also referred to as tendonitis.