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DNA REPORT

XXX

Barbara Geusens
Barbara@nomige.com

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Dear xxx,

Your DNA has been successfully analysed and you will find the results in the report below. The report is laid out as follows:

1) Introductory explanation about the genes that have been investigated
2) The results of your analysis and your risk profile
3) The solution and the advice offered by Nomige

If you would like to discuss this over the phone, don't hesitate to call! We can go through it together.

Best wishes,

Barbara

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INTRODUCTION

The role of DNA & lifestyle

Both your genes and your lifestyle have an effect on your skin; what your skin looks like and how it will age.

You can have 'good genes' but if you have an unhealthy lifestyle (a lot of UV exposure, smoking, pollution, ..) you will see the consequences of these external factors on your skin. Conversely, high genetic risks can also be limited by maintaining a healthy lifestyle.

So these two factors are in balance and the purpose of this report is to map out any genetic risks so that you know how to adjust your lifestyle accordingly. You will find this advice at the end of this report. The information about your personalized products, the ingredients and how they respond effectively to your genetic risks can be found under your results.

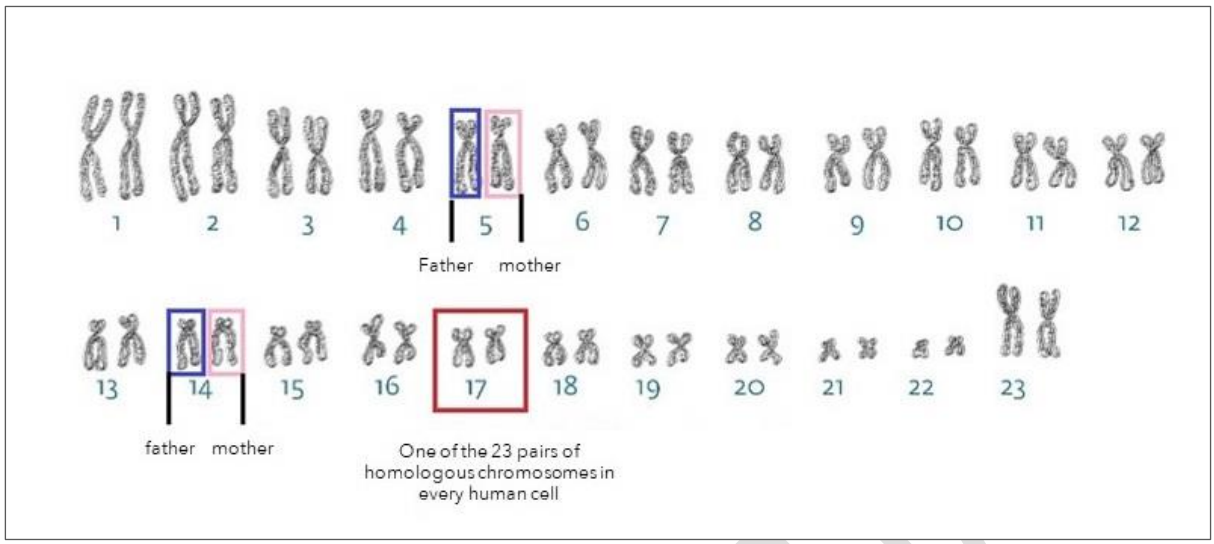
The genetic test

The Nomige genetic test investigates genes involved in various biological processes that have an effect on:

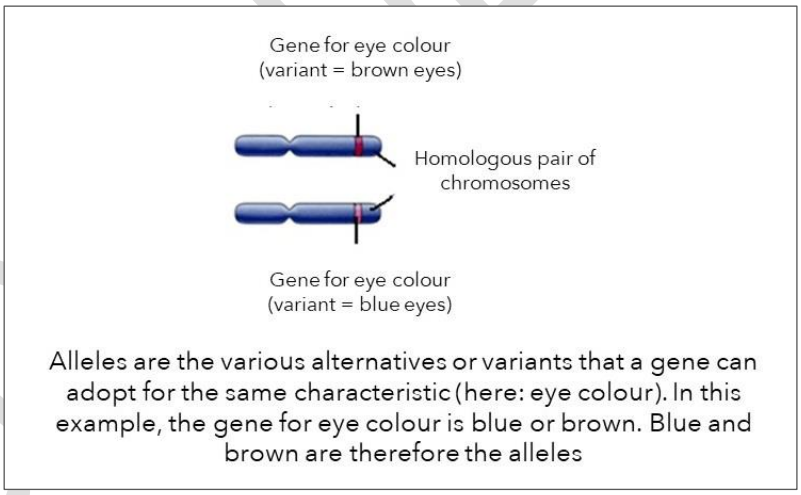
- Firmness, elasticity & wrinkles
- Oxidative stress and antioxidant capacity
- Hydration, skin barrier & sensitivity

Before explaining how you should interpret the analysis, I would first like to tell you a little about your DNA.

Human DNA is present in every cell of the body. It consists of 46 chromosomes or 23 chromosome pairs, one from your father and one from your mother. Chromosome pairs are ‘homologous’, i.e. largely identical to each other, but variations do occur in some places. These variations are called alleles or gene variants.



Genes carry information. Each of your characteristics is the result of a piece of code from which a gene is built. Thus, you have a gene for eye colour, and depending on the code, you will have blue or brown eyes. The variations which go to make up this code are called alleles.



Therefore, each gene has 2 variants: 1 allele on each chromosome. Sometimes these variants are identical (e.g. 2 times blue), sometimes not (e.g. blue and brown).

For every gene of yours that we have investigated we read the genetic code for the 2 alleles. We are looking for variants within specific skin properties that contain mutations (or 'errors') in their code, which results in less favourable skin properties.

Everything will probably become clear when we discuss your results.

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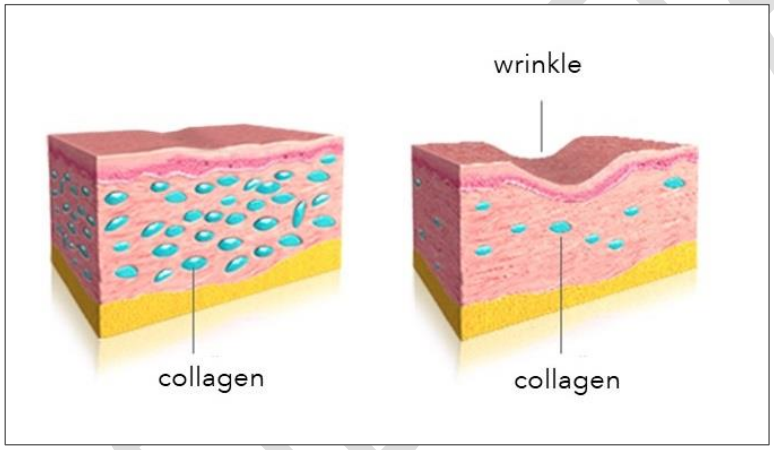
YOUR RESULTS

Firmness, elasticity & wrinkles

Collagen is the largest group of molecules from which your subcutaneous connective tissue, or the extracellular matrix, is composed. It gives structure and firmness to your skin. Collagen is produced by fibroblasts and broken down by enzymes, namely matrix metalloproteinases (MMP). When there is a good balance between production and collagen degradation, the extracellular matrix generates a beautiful, firm skin. When more collagen is broken down than produced, the firmness diminishes and wrinkles appear.



Accelerated collagen breakdown can be the result of the wrong lifestyle and/or a misprogrammed genetic code. Mutations (or: 'errors', defects) in MMP genes, such as collagenase (MMP-1) and stromelysin (MMP-3), cause the corresponding enzymes to be 'overactive' and to work more rapidly than desired. They break down collagen faster than it is produced. This can cause the skin to lose firmness and age faster.

If you then remember that your skin produces less collagen as you get older, then it makes sense to intervene in good time.

Results

We have investigated your DNA and looked at the genes responsible for the production of enzymes that break down collagen.

According to our specific method of analysing* your DNA, we have deduced that you have **1 mutation** in the MMP-1 gene and **2 mutations** in the MMP-3 gene.

You have 3 mutations and are therefore a "high risk" profile for collagen breakdown. Neither gene is working as it should, which means that your skin is at high risk of losing its firmness more rapidly than usual. Also, this is probably the reason why your skin tends to scar easily. Your wound healing process is slower due to the overactive MMP's and thus you are more prone to scar formation (e.g. as a results of acne).

No need to panic, because we can tackle this by adding Citrus Reticulata (Tangerine) Peel Extract and tripeptide-10 & tripeptide-1, which respectively temper the action of the 'overactive' MMP-1 and MMP-3 enzymes (Zhou *et al.*, 2013; Raikou *et al.*, 2017) and reduce their activity, so that your collagen does not break down so rapidly.

Furthermore, the following active ingredients have been selected for you and added to your night cream:

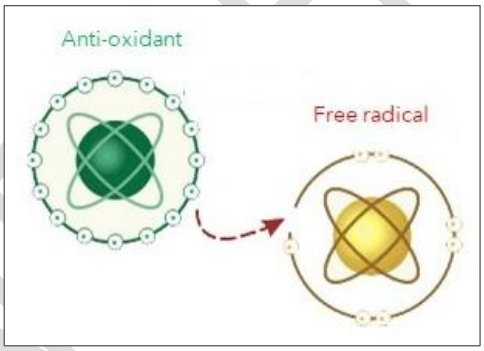
- Palmitoyl tripeptide-1 and palmitoyl tetrapeptide-7: an extra cocktail of peptides that stimulates the production of collagen and elastin, leading to a firmer skin (Bae *et al.,* 2017)
- Glycine soy extract: also stimulates the synthesis of collagen (Waqas *et al.*, 2015)
- Lactococcus ferment: works like retinol and promotes skin regeneration (Al-Ghazzewi *et al.*, 2014)

Oxidative stress and antioxidant capacity

You may be familiar with the terms oxidative stress, free radicals and antioxidants. They are all interrelated in the following way:

Free radicals are very small reactive atoms that emerge in our body as 'waste products' of metabolism. These 'waste products' can cause damage to surrounding cells and tissue by binding to them. A chemical reaction takes place (oxidation), which disrupts the biological processes of the cells in question.

Under 'normal' circumstances and with a healthy lifestyle, the production of free radicals is limited. Those few free radicals that do arise are also taken up and neutralised by the antioxidants that our body makes itself. As such, the surrounding tissues are protected. Two important endogenous (made by the body) antioxidants are superoxide dismutase and glutathion peroxidase.



When your skin makes fewer antioxidants, due to the presence of minor defects or mutations, you are at a higher risk of tissue damage caused by free radicals. It is then recommended to rectify the problem with the right antioxidants in order to combat (accelerated) skin ageing.

Aside from the genetic aspect ,your lifestyle obviously plays a role as well: an unhealthy and unbalanced lifestyle (smoking, UV light, pollution, …) causes extra transport of free radicals. In such cases your skin can be given extra protection from outside, something that our Lifestyle creams offer.

Results

We have investigated your DNA and looked at the genes responsible for the production of endogenous antioxidants superoxide dismutase (SOD-2) and glutathion peroxidase (GPX).

According to our specific method of analysing* your DNA, we have deduced that you have **1 mutation** in the superoxide dismutase gene and **1 mutation** in the glutathion peroxidase gene.

Because you have 2 defects, your skin is a "**medium risk**", because your endogenous antioxidants are not working to their full potential. Your skin is therefore more exposed to the harmful effects of free radicals (due to stress, pollution, UV damage, …), which will also cause your skin to age faster. Also, this might be a reason why you have hyperpigmentation spots.

No reason to panic because the active ingredients that we will add to your **day serum** will compensate for the defects.

- **SOD & glutation**: These exceptional ingredients help respectively to repair the effects of your SOD-2 and GPX mutations.

On top, we'll add the following actives that not only stimulate the action of SOD-2 & GPX but will also tackle your pigmentation spots:

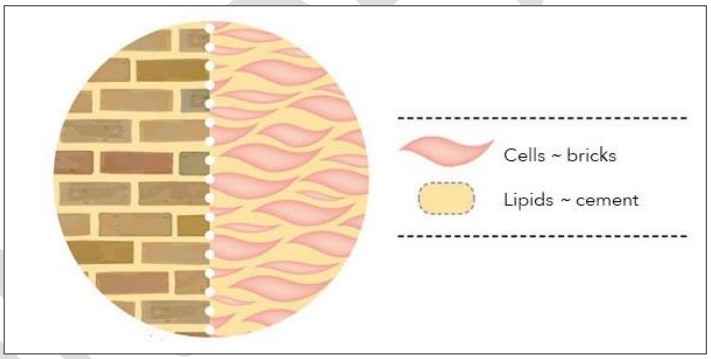
- **Vitamin C and vitamin E**: a combination of powerful antioxidants with depigmenting action (Herndon *et al.*, 2016)
- **Sophora Japonica Flower extract**: a flavonoid that protects against UV & pollution and tackles blemishes and scars (Lo *et al.*, 2009)
- **Vitis vinifera juice extract & resveratrol**: this combination reduces UV-induced pigment spots & fades scars. Resveratrol also helps protect the skin against daily damage from outside and has a soothing effect (Sharif *et al.,* 2015; Soto *et al.,* 2015; Alonso *et al.*, 2017)

Hydration & skin barrier

To a certain extent, hydration and skin barrier are brothers in arms. After all, a good, intact skin barrier promotes good hydration.

Your skin is the only organ in direct contact with the outside world. It is therefore vital that your skin forms a strong barrier against all kinds of external threats (microbes, allergens, pollution, …). Nature has of course taken this into account and the outermost layer of skin is a strong, compact structure of cells surrounded by lipids (fats).

This layer of skin can also be represented as a brick-cement structure, in which the skin cells are the bricks and the lipids in your skin are the cement. This structure ensures that 'foreign substances' such as microbes or allergens do not penetrate the skin, and that water does not evaporate from the skin. In this way, the skin retains fluid and stays well hydrated, making wrinkles less visible.



The most important components of the lipid layer are ceramides (sphingolipids), cholesterol and free fatty acids. A reduction in the number of ceramides and/or ceramides that are shorter in length can result in a less compact structure because the cement layer shows 'holes'. As a result, the skin dries out as water evaporates. Conversely, 'foreign substances' can also penetrate the skin more easily, causing allergic reactions. That's why people with a broken cement structure suffer not only from dry, but also from hypersensitive skin.

One of the most researched genes responsible for the construction of the cement structure is Filaggrin (FLG). Mutations in the FLG gene are accompanied by a reduced number of ceramides, shorter ceramides, and lower numbers of 'natural moisturising factors'.

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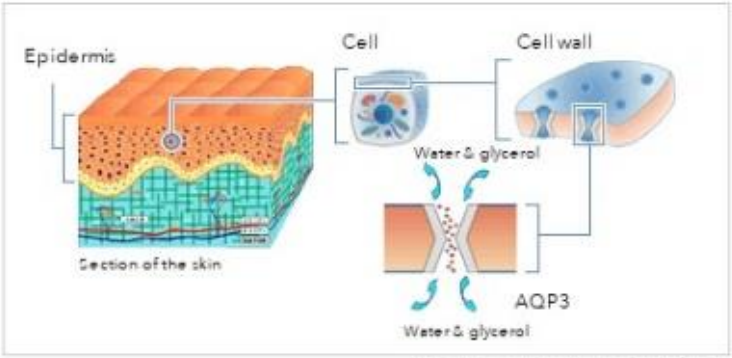
'Natural moisturising factors (NMF)' are molecules present in the outermost skin cells; they attract and retain water. It is yet another way in which the skin is self-hydrating. One of the most well-known and common NMF is glycerin. When glycerin is not being transported through the cell membrane as efficiently as it should be, due to a defective transporter molecule (such as Aquaporine-3; AQP-3), dry skin is often the result.



Adapted and modified from Le French Skin Care

Results

We have examined your DNA and looked at the genes responsible for the production of intercellular lipids & natural moisturising factors (FLG) on the one hand, and the transport of glycerin and water on the other hand (AQP-3).

According to our specific method of analysing*** your DNA, we have deduced that you have **no mutations** in the filaggrin (FLG) gene and **no mutations** in the aquaporine-3 (AQP-3) gene.

The fact that you have no defect in the FLG gene is good news. According to our data, there is nothing to indicate that your skin barrier is not working as it should. You are therefore a "**low risk**".

It also looks as though you have a naturally well hydrating skin. However, you indicate that you do suffer from dry skin. This may well be the result of using the wrong products or soaps, or the fact that you are exposed to airconditioning every day…

Your night serum therefore contains the following ingredients to keep your skin well hydrated at night:

- Skin's own lipids, such as **sphingolipids, phospholipids** and **cholesterol**, to firm up the intercellular lipid layers (Lodén & Bárány., 2000)
- Moisturising molecules such as **urea** and **amino acids** for deep hydration (Kuzmina *et al.*, 2002)

CONCLUSION & RECOMMENDATIONS

xx, I have written a brief summary below about what we were able to conclude from your DNA.

You don't score very well on the parameter 'collagen & elasticity', which means that you have a high risk of accelerated collagen breakdown. You should therefore focus on this aspect. The ingredients Citrus Reticulata (Tangerine) Peel Extract and tripeptide-10 & tripeptide-1 have proved their efficacy and are very efficient at slowing down collagen breakdown. Therefore, use your Nomige night cream every day.

A few extra general tips:

- Be gentle with your skin. Be careful with aggressive peelings and scrubs. Always consult a doctor and have it done under strict supervision.
- Give your skin a soft massage now and then. This stimulates collagen production and increases blood supply.
- Eat healthy food! Carrots contain vitamin A, cabbage and garlic contain sulphur. These stimulate collagen production.
- Protect your skin from the sun every day; the damaging UV rays accelerate the breakdown of collagen. An SPF 15 (such as in your Lifestyle cream) is enough if you don't go out very often (1-2 hours per day) and don't sit in the bright sun. If you're planning to do this, rub on some extra protection.

You score average on the parameter 'antioxidant capacity'. The antioxidants that we are looking at here are only partially made. So your skin could definitely use some support. This can be done by adding the right mix of additional antioxidants to your Nomige day serum, thus boosting the production of your body's own antioxidants.

You can also increase production by means of your lifestyle and food intake.

How exactly?

- Nutrition:
    - Green vegetables such as broccoli and sprouts contain natural SOD and can therefore boost your internal SOD production
    - Increase your glutathion production by eating eggs, sardines, organic meat, tuna, nuts

- Skin care: in addition to good skin care during the day, it is important to continue this at night. But not before you have cleansed your skin. Make sure you use a mild cleanser. One that doesn't foam and doesn't contain granules.

You score well on hydration and barrier function. Nothing exceptional. According to our parameters you have a naturally well hydrated skin, which shouldn't feel dry, and shouldn't appear dry or dull. Your night serum is a kind of 'maintenance serum', developed to keep your skin in this condition; it is very light in texture and has a lifting effect on your skin.

You live in a hot climate, where your skin is exposed to dry, air-conditioned air every day. It's normal that your skin is dehydrated. You should therefore use your daycream (Lifestyle cream) **'Ultra Rich Moisturiser'** on a regular basis. If necessary 2 times a day, if you feel your skin needs this (in the beginning). It will restore the moisture balance, which has been damaged by external factors.

Your daycream contains SPF15. You need extra protection if you'll be directly exposed to sunlight for longer than 15 minutes.

* single nucleotide polymorphism (SNP) analyses were carried out via TaqMan assay and sanger sequencing respectively on rs1799750 and rs3025058
** single nucleotide polymorphism (SNP) analyses were carried out via TaqMan assay and sanger sequencing respectively on rs4880 and rs1050450.
*** single nucleotide polymorphism (SNP) analyses were carried out via TaqMan assay and sanger sequencing respectively on rs17553719 and rs61816761