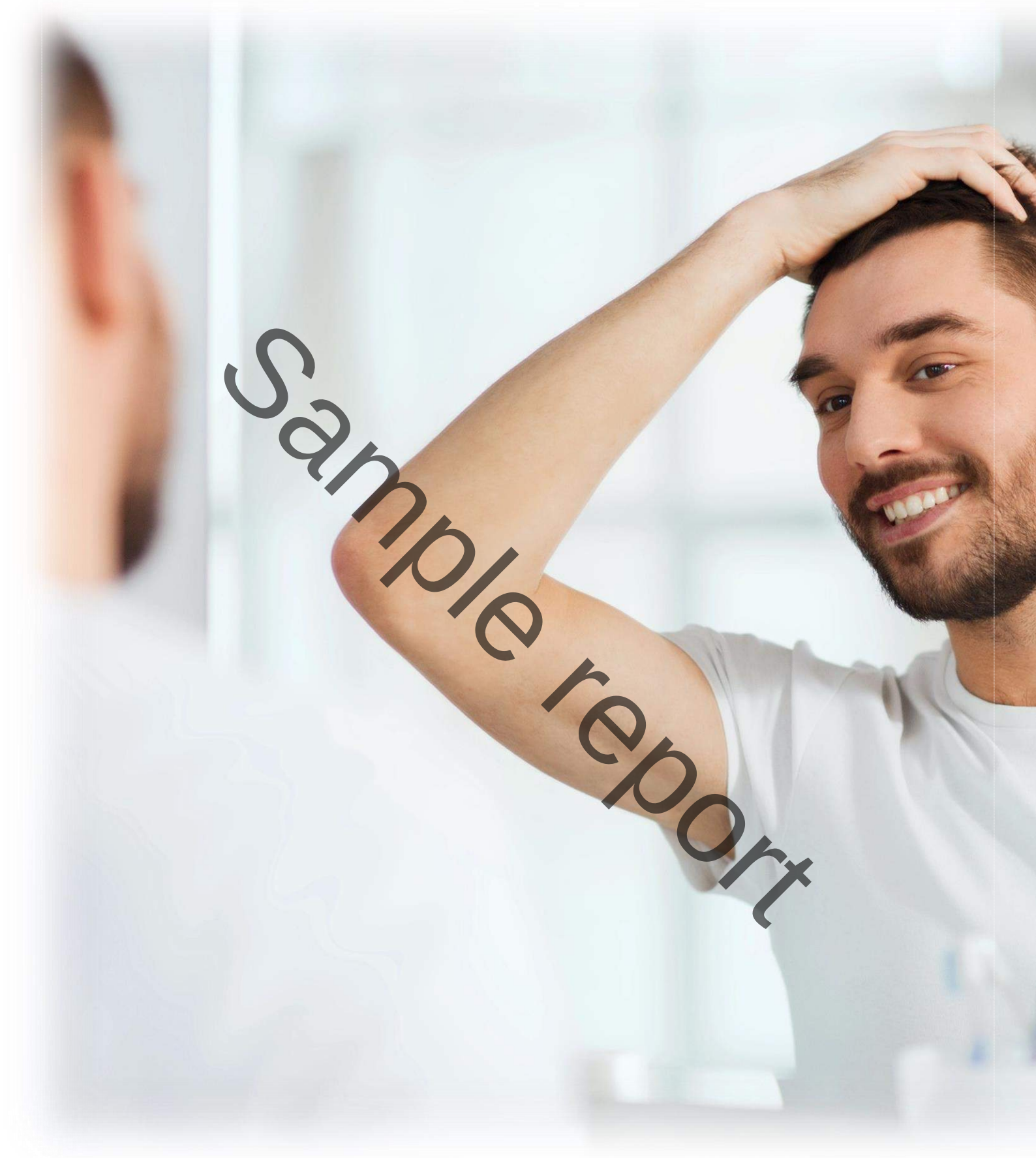
Sample report

INTRODUCTION

Androgenetic alopecia is a common form of hair loss that affects both men and women. It is also known as male or female pattern baldness. This condition, as can be guessed from its name, is mainly caused by a **genetic** predisposition and the influence of **androgenic** hormones, such as dihydrotestosterone (DHT), which cause a progressive thinning of the hair and a reduction in its growth cycle. In **men**, it typically manifests as recession of the hairline and loss in the vertex area, while in **women** it presents with diffuse thinning on the upper part of the scalp, generally maintaining the frontal hairline.

The test takes into account the following genetic variants, known to influence hair loss:

- Androgen Receptor (AR)
- Ectodysplasin A2 receptor (EDA2R)
- Antioxidant capacity (SOD2)
- Chromosome locus 20p11.22

Each variant is explained in detail in the report.

Unfavourable genetic variants are mutations or alterations in genes that increase the likelihood of developing alopecia. These variants influence the way hair follicles react to hormones (such as DHT), oxidative stress, inflammation and other factors that can lead to hair loss.

Favourable genetic variants are those that reduce the risk of developing alopecia or confer greater resistance to hair loss. These variants may positively influence the response of hair follicles to hormones, improve the ability to repair oxidative damage, or maintain scalp health.

Having both unfavourable and favourable variants means that one's risk of developing alopecia is not determined by a single gene, but by the balance between genetic risk and protective factors. The combination of variants can influence the severity, age of onset and progression of hair loss.
If unfavourable variants prevail, the risk of alopecia will be higher, and more aggressive prevention and treatment strategies may be required.

WHAT THE REPORT INCLUDES

- Detailed EXPLANATION of the particular test performed and recommendations to be followed.
- SUMMARY TABLE showing for each test the list of the metabolic areas investigated and the summary of the respective results obtained from the analysis of its DNA, in order to have a quick overview of its general situation and to check for possible compromised situations.
- BIBLIOGRAPHY providing scientific references for the test.

COLOURS USED

Green indicates that the variants identified in the analysis do not unfavourably alter the enzyme activity of the protein they encode and/or the risk associated with certain diseases.

Orange indicates that the variants identified in the analysis slightly unfavourably alter enzyme activity and/or the risk associated with certain disorders or diseases.

Red indicates that the variants identified in the analysis alter enzyme activity in a particularly unfavourable way, resulting in an increased risk of developing certain disorders or associated diseases.

The results illustrated, as well as the considerations and explanations contained in the following pages of this booklet, should not be regarded as a medical diagnosis. It is important to bear in mind that genetic information is only part of the total information needed to gain a complete picture of a person's state of health. The data given here is therefore a tool for the treating physician to formulate a correct assessment of the patient's physiological state and suggest an appropriate personalised treatment.

ANDROGENIC ALOPECIA

1. ANDROGEN RECEPTOR (AR)

The test evaluates the **AR (*Androgen Receptor*) gene** whose unfavourable variant is closely associated with androgenetic alopecia, especially in men but also in women. This gene codes for the androgen receptor, which is sensitive to dihydrotestosterone (DHT), a hormone that contributes to hair follicle miniaturisation and hair loss. An unfavourable variant implies an increased sensitivity to DHT levels, accelerating hair loss.

The genetic analysis produced the following result:

Gentras ID	Gene	Allelic variants	Genotype		Predisposition
ANDROGEN HORMONE RECEPTOR					
GTS055	AR	A	A	A	LOW
		G			
WHAT YOUR GENETICS SAY					
					
A FAVORABLE genetic profile is present for the gene analysed.					

Recommendations if the AR Gene Variant is unfavourable:

- **Anti-Androgen Therapies**:

- *Finasteride*: Inhibits the enzyme 5-alpha reductase, which converts testosterone to DHT. By reducing DHT levels, finasteride slows the progression of alopecia and may stimulate slight regrowth. It is especially indicated for men.

- *Dutasteride*: An even more powerful 5-alpha reductase inhibitor that reduces both DHT production in the scalp and the rest of the body. It is often used in cases where finasteride is not sufficient.

- *Topical antiandrogens (e.g. Alfatradiol)*: These are less systemic than oral versions and can reduce DHT levels directly on the scalp.

- **Topical Minoxidil**:

- *2% or 5% solution:* Minoxidil is a topical treatment that increases blood flow to the scalp and prolongs the anagen (growth) phase of the hair cycle. It is one of the most common and safest treatments to combine with antiandrogens.

- Regenerative and stimulating treatments:

- *Microneedling*: Promotes regeneration of hair follicles and enhances the efficacy of minoxidil. Helps improve absorption of topical treatments and stimulate hair growth.

- *PRP (Platelet Rich Plasma) therapy*: Uses autologous growth factors to stimulate hair follicles, improving hair density and quality.

- *Low Intensity Laser Therapy (LLLT)*: Helps improve follicle health by stimulating cellular activity and reducing scalp inflammation.

- Supplementation of Essential Nutrients:

- *Zinc, Biotin and Vitamin D*: These micronutrients are essential for healthy scalp and hair. Supplementation can help support hair follicles and improve treatment results.

- *Omega-3 and Omega-6 fatty acids*: These have anti-inflammatory properties and can help improve the general health of the scalp.

- Use of Specific Products for the Scalp:

- *Shampoo with Ketoconazole*: This antifungal shampoo also has mild antiandrogen properties and can reduce DHT levels in the scalp.

- *Lotions with Caffeine or Serenoa Repens*: These ingredients can locally inhibit the action of DHT, supporting hair growth.

- Reducing Environmental Risk Factors:

- *Protection from UV Rays*: Exposure to UV rays can worsen oxidative stress on hair follicles. The use of protective hats or sprays is recommended when outdoors.

- *Stress management*: Stress can negatively affect hormone levels and aggravate hair loss. Relaxation techniques such as yoga, meditation and regular physical activity can be helpful.

- Monitoring and Specialist Consultations:

- *Regular visits to the dermatologist or trichologist*: Monitoring the response to treatments is essential to adapt therapies and ensure the best possible results.

- *Hormone and Follow-Up* Tests: Regular tests to monitor DHT levels can help assess the effectiveness of antiandrogen therapies.

CONCLUSIONS

One or two unfavourable variants of the AR gene require a targeted preventive and therapeutic approach to limit hair loss and support hair growth. Drug therapies, regenerative treatments and careful lifestyle management can make a significant difference in the management of androgenetic alopecia associated with this genetic predisposition. Working with specialists will help tailor treatment to specific genetic and clinical needs.

2. ECTODISPLASIN RECEPTOR A2 (EDA2R)

The test evaluates the **EDA2R (*Ectodisplasin A2 Receptor*) gene**, which is involved in the development of hair follicles, sweat glands and epidermal structures. An unfavourable variant of the EDA2R gene can impair the formation and functioning of hair follicles, contributing to conditions such as alopecia and brittle hair.

The genetic analysis produced the following result:

Gentras ID	Gene	Allelic variants	Genotype		Predisposition
ECTODYSPLASIN A2 RECEPTOR					
GTS056	EDA2R	C	C	C	LOW
		T			

WHAT YOUR GENETICS SAY
A FAVORABLE genetic profile is present for the gene analysed.

Recommendations if the EDA2R Gene Variant is unfavourable

- **Support for Healthy Scalp and Hair Follicles**:

- *Topical treatments with Growth Factors and Peptides*: Lotions and serums containing growth factors (such as FGF, EGF) and biomimetic peptides can stimulate hair follicles, promoting their regeneration and improving hair quality.

- *Scalp massages*: Stimulating the scalp with regular massages can increase blood circulation, improving the nourishment and oxygenation of hair follicles, promoting stronger hair growth.

- **Regenerative and stimulant therapies**:

- *Microneedling*: This technique creates microneedles that stimulate the regeneration of hair follicles and improve the absorption of topical treatments, helping to strengthen hair.

- *PRP (Platelet Rich Plasma) therapy*: Uses growth factors derived from the patient's own blood to stimulate hair follicles, improving hair density and thickness.

- *Low Intensity Laser (LLLT)*: This therapy helps improve hair growth by increasing cell activity in hair follicles, being useful in cases of EDA2R gene impairment.

- Supplementation of Specific Nutrients:

- *Biotin, Zinc and Vitamin D*: These nutrients are essential for healthy hair and scalp. Vitamin D, in particular, plays a crucial role in regulating the growth of hair follicles.

- *Omega-3 and Omega-6 fatty* acids: These essential fatty acids reduce inflammation and improve the health of the skin and hair follicles.

- *Collagen and Organic Silicon*: Support the hair structure and improve the elasticity and resistance of hair follicles.

- Use of Suitable Cosmetic Products:

- *Gentle and Strengthening Shampoos*: Use sulphate- and paraben-free shampoos and conditioners with nourishing ingredients such as keratin, panthenol and aloe vera to strengthen fragile hair.

- *Lotions with Ectoine or Niacinamide*: These ingredients can improve the skin barrier of the scalp, protecting follicles and promoting healthy hair growth.

- Pharmacological and Medical Approaches:

- *Topical Minoxidil*: Promotes elongation of the anagen phase of the hair and may be useful for improving the quality of damaged hair follicles.

- *Consult a Trichology Specialist*: Regular evaluations with a trichologist can help monitor follicle health and adapt treatments according to individual response.

- Reducing Environmental and Behavioural Risk Factors:

- *Protection of the Scalp from UV Rays*: Use protective hats or sprays to reduce sun damage, which can further impair hair follicles.

- *Avoid Aggressive Hair Treatments*: Reduce the use of chemical dyes, high temperature treatments and products with irritating ingredients to protect hair follicles from further damage.

CONCLUSIONS

One or two unfavourable variants of the EDA2R gene require an integrated approach to support and protect hair follicles. Regenerative treatments, targeted supplements and lifestyle modifications can reduce the negative effects of this genetic variant. Collaborating with a dermatologist or trichologist is essential to develop a customised plan that optimises hair and scalp health, improving growth quality and preventing further damage.

3. ANTIOXIDANT CAPACITY (SOD2)

The test evaluates the genetic variant involving the **SOD2 (*Superoxide Dismutase 2*) gene** that is associated with reduced antioxidant capacity, with direct implications for hair health and the management of alopecia. SOD2 is a crucial enzyme that protects cells from oxidative damage by neutralising free radicals. An unfavourable variant in this gene may reduce the efficiency of this defence system, increasing oxidative stress, which may contribute to hair loss and thinning.

The genetic analysis produced the following result:

Gentras ID	Gene	Allelic variants	Genotype		Predisposition
SOD2 ANTIOXIDANT CAPACITY					
GTS006	SOD2	T	C	C	HIGH
(Superoxide Dismutase 2)		C			

WHAT YOUR GENETICS SAY

An UNFAVORABLE genetic profile is present for the gene analysed, the use of antioxidant nutraceuticals is recommended (see Recommendations).

Recommendations if the SOD2 Gene Variant is unfavourable

- **Increasing Antioxidant Intake in the Diet**:

- *Antioxidant-rich foods*: Supplement your diet with antioxidant-rich fruits and vegetables such as berries, citrus fruits, spinach, broccoli, carrots and tomatoes. These foods help fight free radicals and reduce oxidative stress.

  - Vitamin C and E: These are powerful antioxidants that protect hair follicles from oxidative damage. Foods such as oranges, kiwis, almonds and sunflower seeds are good sources.
  - Glutathione and Coenzyme Q10: Consider supplements that increase levels of glutathione, a major intracellular antioxidant, and coenzyme Q10, which supports mitochondrial function and cellular health.

- Specific Antioxidant Supplements

- *N-Acetylcysteine (NAC)*: boosts glutathione production and improves defence against oxidative stress.

- *Alpha-Lipoic Acid (ALA)*: A powerful antioxidant that acts in both the aqueous and lipid compartments of the cells, protecting hair follicles.

- *Selenium and Zinc*: Essential minerals that support SOD2 function and improve the overall antioxidant response.

- Antioxidant Topical Scalp Treatments:

- *Serums and Lotions with Vitamin E, Caffeine and Antioxidant Peptides*: These ingredients help neutralise free radicals directly on the scalp, improving the health of hair follicles.

- *Essential Oils with Antioxidant Action* (e.g. Rosemary Oil, Peppermint Oil): Stimulate microcirculation and offer protection against oxidative damage.

- Reduction of Physical and Emotional Stress:

- *Stress Management*: Stress increases the production of free radicals and can aggravate hair loss. Relaxation techniques such as meditation, yoga and deep breathing can improve hair health by reducing oxidative stress.

- *Quality sleep*: Insufficient sleep can increase oxidative stress. Aim for 7-8 hours of good quality sleep to optimise cellular repair.

- Limitation of Exposure to External Oxidising Factors:

- *UV protection*: Exposure to the sun can increase oxidative damage. Use hats or protective scalp sprays when outdoors.

- *Avoid Smoking* and *Pollution*: Smoking and smog increase free radicals in the body, further damaging hair follicles. Reducing exposure can help improve hair health.

- Dermatological Monitoring and Controls:

- *Regular check-ups*: Consult a dermatologist or trichologist to monitor scalp and hair health and assess the effectiveness of the measures taken.

- *Antioxidant Capacity Testing*: Some specific tests can monitor the general oxidative state and the efficiency of the antioxidant defence, helping to further customise intervention strategies.

CONCLUSIONS

Managing one (or two) unfavourable variants of the SOD2 gene requires an integrated approach including lifestyle changes, the use of targeted supplements and specific scalp treatments. Improving antioxidant capacity may not only help reduce hair loss, but also improve the overall health of the scalp, promoting stronger and more resistant hair growth.

4. LOCUS CHROMOSOME 20p11.22

The test evaluates the genetic variant of the **chromosome 20p11.22 locus**, which is one of the most significant associated with androgenetic alopecia, especially in men. Various studies have shown that this genetic variant increases the risk of developing early and more severe baldness.

The term *locus chromosome 20p11.22* refers to a specific position on chromosome 20 within the human genome. Here is a detailed explanation of the meaning of this term:

- Chromosome 20: refers to the 20th human chromosome, one of the 23 pairs of chromosomes present in human cells.

- p: indicates the short arm of the chromosome. Chromosomes have two arms: the short arm (p, from the French 'petit') and the long arm (q).

- 11.22: represents the exact position on the short arm of chromosome 20. The numbers are divided into two parts: the first digit (11) represents the region and main band, while the second (22) indicates a more specific sub-band within the main band.

The notation 20p11.22 thus identifies a precise zone on chromosome 20 that may contain one or more genes.

The genetic analysis produced the following result:

Gentras ID	Gene	Allelic variants	Genotype	Predisposition
Locus 20p11.22				
GTS057	Locus 20p11.22	C	T	HIGH
		T		

WHAT YOUR GENETICS SAY

An UNFAVORABLE genetic profile is present for the gene analysed.

Recommendations if Locus Variant 20p11.22 is unfavourable:

- **Early Start of Preventive Therapies**:

- *Finasteride* or *Dutasteride*: Consider using finasteride (1 mg daily) or dutasteride, which inhibit the conversion of testosterone into DHT, the hormone responsible for the miniaturisation of hair follicles. Starting early can significantly reduce the progression of hair loss.

- *Topical minoxidil (2% or 5%)*: Daily application of minoxidil can prolong the growth phase (anagen) of the hair and promote thickening of the follicles.

- **Advanced Capillary Regeneration Therapies:**

- *PRP (Platelet Rich Plasma) therapy:* PRP injections into the scalp can stimulate follicle growth, improving hair density and prolonging the hair's life cycle.

- *Microneedling with Minoxidil*: The combination of microneedling and minoxidil enhances the effectiveness of the treatment by increasing drug absorption and stimulating cell regeneration.

- **Hair Transplant Surgeries:**

- In the case of advanced progression and despite preventive therapies, a hair transplant (FUE or FUT) may be considered. This surgical solution repositions follicles from areas less sensitive to the effects of DHT to thinning areas.

- **Lifestyle modifications:**

- *Antioxidant and Nutrient Rich Diet*: Supplement a diet rich in vitamins (such as vitamin D, biotin, zinc and iron) to support follicle health and reduce inflammation.

- *Stress reduction*: Techniques such as yoga, meditation and regular physical activity can reduce chronic stress, which can aggravate hair loss.

- **Use of Cosmetic Products and Specific Shampoos:**

- *Anti-DHT shampoo*: Products containing ketoconazole or other DHT inhibitors can help reduce the miniaturisation of hair follicles.

- *Lotions with Caffeine or Peptides*: These ingredients can improve scalp microcirculation and support the growing follicles.

- **Monitoring and Regular Consultations:**

- *Dermatological Follow-Up*: Regular visits to a dermatologist specialising in trichology to monitor the progression of baldness and adapt therapies according to individual response.

- *Periodic Hair Tests*: Assessments of hair density and thickness can provide useful data on the effectiveness of the treatment.

CONCLUSIONS

One or two unfavourable variants in the chromosome 20p11.22 locus indicates a significant genetic predisposition to hair loss, but the implementation of a timely and customised treatment plan can make a big difference. The early adoption of drug treatments, the choice of innovative therapies and the support of an expert in trichology are crucial to counteract the impact of this genetic variant.