Personalized Hair Growth Genetics Profile

www.lifeextension.com

LIFE EXTENSION®
The Science of a Healthier Life®

TrichoTest™ Genetic report

METHODOLOGY AND LIMITATIONS DISCLAIMER:

Testing for genetic variation/mutation on listed genes was performed using Real-Time PCR with TaqMan® allele-specific probes on the QuantStudio 12K Flex. All genetic testing is performed by GX Sciences, LLC d/b/a Fagron Genomics US ("Fagron Genomics US") located at 807 Las Cimas Pkwy, Suite 145, Austin TX 78746. This test will not detect all the known alleles that result in altered or inactive tested genes. This test does not account for all individual variations in the individual tested. Test results do not rule out the possibility that this individual could be a carrier of other mutations/variations not detected by this gene mutation/variation panel. Rare mutations surrounding these alleles may also affect our detection of genetic variations. Thus, the interpretation is given as a probability. Therefore, this genetic information shall be interpreted in conjunction with other clinical findings and familial history for the administration of specific treatments. Patients should receive appropriate genetic counseling to explain the implications of these test results. The analytical and performance characteristics of this laboratory developed test (LDT) were determined by Fagron Genomics US's laboratory (Laboratory Director: James Jacobson, PhD) pursuant to Clinical Laboratory Improvement Amendments (CLIA) requirements (CLIA #: 45D2144988).

MEDICAL DISCLAIMER:

This test was developed and its performance characteristics determined by Fagron Genomics US. It has not been cleared or approved by the FDA. The laboratory is regulated under CLIA and qualified to perform high-complexity testing. This test is used for clinical purposes. It should not be regarded as investigational or for research. The Reference SNP Cluster IDs (rsIDs) for the alleles being tested were obtained from the Single Nucleotide Polymorphism Database (dbSNP). These products are not approved by the Food and Drug Administration and are not intended to diagnose, treat, cure or prevent disease. These recommendations are for report purposes only and an individual is not required to use such products. These are recommendations only and do not replace the advisement of your own healthcare practitioner.

LEGAL DISCLAIMER:

Report contents and report recommendations are created based on the consultation, advice, and direction of Dr. Gorana Kuka, the Medical Director for Fagron Genomics US TrichoTest protocols. Report contents and report recommendations are intended to be informational only. Report contents and report recommendations are not intended and should not be interpreted to make claims regarding the use, efficacy, or safety of products, formulas, and/or services listed herein. Only a doctor or other appropriately licensed health care practitioner can determine if a formula, product, or service described herein is appropriate for a specific patient. Sole risk for the use of all Fagron Genomics US lab test orders and test interpretation results rests with the reader. Implementation or experimentation with any supplements, herbs, dietary changes, medications, and/or lifestyle changes, etc. is done so at the patient's sole risk and responsibility and should be discussed with the patient or the patient's personal licensed healthcare practitioner prior to implementation. Fagron Genomics US and its affiliates, employees, associates, vendors, principals or partners, do not accept legal, moral, or ethical responsibility for any problems arising from experimentation with the information described in test results. Fagron Genomics US expressly reserves all legal rights and remedies in case of an inappropriate, negligent, or incorrect use or interpretation of the results of its tests.

1.
Patient identification data

Ordering physician	**Sample Doctor**
Patient's name	**Sample Name**
Gender	**Male**
Date of birth	**01-01-1969**
Sample type	**Buccal Swab**
Sample code	**TRI99999AA**
Collection date	**02-05-2025**
Received date	**02-10-2025**
Genetic results date	**02-21-2025**

2.
Recommendation of the most suitable drugs and supplements

The **genetic test** uses an automated qualitative pharmacogenetic algorithm that analyzes the patient's genetic data and combines this information with relevant patient history to recommend the most suitable active ingredients. Next, we show on a color scale which compounds the algorithm recommends the most. The transition from white to dark green indicates drugs from least recommended to most recommended. Medications blocked due to intolerances or contraindications are shown in red.

Anti-alopecic drugs

Prostaglandins	
• Latanoprost	89%
• Minoxidil	86%
• Cetirizine Hcl	25%

Antiandrogenic	
• Dutasteride	100%
• Finasteride	99%
• Spironolactone	100%
• Saw Palmetto	53%
• Melatonin	50%

Anti-inflammatory	
• Clobetasol propionate	
• Triamcinolone acetonide	
• Hydrocortisone	
• Betamethasone dipropionate	
• Desonide	
• Fluocinolone acetonide	

Immunomodulator	
• Tacrolimus	

Hair care supplements

Circulation	
• Arginine	57%
• Caffeine	25%

Collagen synthesis
• Cystine

Antifungal	
• Cyclopirox olamine	100%
• Clotrimazole	100%
• Ketoconazole	100%

Vitamin, mineral and antioxidant supplements

Vitamin deficiency	
• Vitamin B12 (Cyanocobalamin)	100%
• Vitamin E (Tocoferol)	100%
• Vitamin B9 (Folate)	67%
• Vitamin B7 (Biotin)	
• Vitamin C (Ascorbic Acid)	
• Lysine	
• Vitamin D	

Antioxidant	
• Selenium yeast	100%
• Astaxanthin	67%

Minerals	
• Iron sulfate	67%
• Zinc sulfate	
• Zinc gluconate	
• Zinc acetate	
• Magnesium Gluconate	

Typical Route of Administration for Suggestions That May Appear on the Hair Growth Genetic Profile

Nutrients

Nutrient	Administration
Arginine	Topical
Astaxanthin	Oral
Caffeine	Both
Coenzyme Q10	Oral
Cystine	Oral
D-Panthenol (B5 provitamin)	Topical
Iron	Oral
L-Carnitine L-tartrate	Topical
Lysine	Oral
Magnesium	Oral
Melatonin	Topical
MSM	Oral
Nicotinamide (Vit B3)	Topical
Pyridoxine (Vit. B6)	Oral
Selenium	Oral
Saw Palmetto	Oral
Vitamin A (Retinol Palmitate)	Oral
Vitamin B12	Oral
Vitamin B7 (Biotin)	Both
Vitamin B9 (Folate)	Oral
Vitamin C (Ascorbic Acid)	Both
Vitamin D	Oral
Vitamin E	Both
Vitamin B1 (Thiamine)	Oral
Zinc acetate	Topical
Zinc	Oral

Medications

Medication	Administration
Betamethasone dipropionate	Topical
Cetirizine Hcl	Topical
Clobetasol propionate	Topical
Clotrimazole	Topical
Ciclopirox olamine	Topical
D-Panthenol (B5 provitamin)	Topical
Desonide	Topical
Dutasteride	Both
Erythromycin	Topical
Finasteride	Both
Fluocinolone acetonide	Topical
Hydrocortisone	Topical
Ketoconazole	Topical
Latanoprost	Topical
Metronidazole	Topical
Minoxidil	Both
Salicylic acid	Topical
Spironolactone	Topical
Sulfur	Topical
Tacrolimus	Topical
Tretinoin	Topical
Triamcinolone acetonide	Topical
Urea	Topical

3.
Formulas for personalized treatments

The pharmacogenetic algorithm has selected a series of formulations for topical, oral use or capillary mesotherapy for the care and hygiene of your patient's scalp. These personalized formulations have been selected taking into account the genetics, the type of alopecia, and the relevant history of the patient.

Topical treatment

Formula	
Latanoprost	0.005 %
Dutasteride	0.25 %
Arginine	1.5 %
Appropriate compounding base such as TrichoSol	**30ml**

Dosage
Apply at night before bedtime. Leave the solution on your scalp for as long as possible. Wash your scalp the next day.

Signature of the prescribing physician	
Dr	
Physician registration No.	
Date	

Address	Signature
_____ _____ _____ _____	

Oral treatment

Formula	
Oral Minoxidil (man)	4.5 mg
Iron sulfate	30 mg
Astaxanthin	10 mg
Saw Palmetto	200 mg

Dosage
1 capsule per day, 90 capsules for 3 months

Signature of the prescribing physician	
Dr	
Physician registration No.	
Date	

Address	Signature

Scalp care and hygiene

Topical treatment

Formula	
Clotrimazole	1 %
Vitamin E (Tocoferol)	5 %
Cyclopirox olamine	1.5 %
Appropriate compounding base such as TrichoOil	**30ml**

Dosage
1-2 times / week, massage for 3-5 minutes and leave it on for 10 min before washing your hair.

Signature of the prescribing physician	
Dr	
Physician registration No.	
Date	

Address	Signature
_____ _____ _____ _____	

Scalp care and hygiene

Topical treatment

Formula	
Ketoconazole	2 %
Appropriate compounding base such as TrichoWash	**250ml**

Dosage
Massage for 2 minutes and rinse

Signature of the prescribing physician	
Dr	
Physician registration No.	
Date	

Address	Signature
_____ _____ _____ _____	

4.
Complete data
Data from the medical questionnaire

Patient demographics

Gender	**Male**
Age (years)	**56**
Family history of alopecia	**Parents**

Hair loss data

Type of alopecia	**Androgenic alopecia**
Grade of alopecia	**Grade Vertex**

Norwood-Hamilton Scale

Clinical examination

Amount of hair loss	**Nothing**
Complaints associated with alopecia	**Seborrheic dermatitis, Dandruff, Irritant dermatitis**
Patchy alopecia	**No**

4.
Complete data
Pharmacogenetic results

1. Anti-alopecic drugs

Treatment efficacy with prostaglandin inhibitors

Prostaglandin D2			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
GPR44-1	rs545659	**CT**	Genetic result: Predisposition to slightly higher GPR44 mRNA stability. Interpretation: Higher expression of the Prostaglandin D2 receptor 2 (GPR44) receptor may lead to increased responsiveness to prostaglandin D2. Treatment recommendation: Consider treatment with Prostaglandin D2 inhibitors (e.g., Cetirizine, Prostaquinon) at standard doses.
GPR44-2	rs533116	**CC**	Genetic result: Predisposition to normal GPR44 mRNA stability. Interpretation: Higher expression of the Prostaglandin D2 receptor 2 (GPR44) receptor may lead to increased responsiveness to prostaglandin D2, a known pathway toward hair follicle regression. Treatment recommendation: While treatment with Prostaglandin D2 Inhibitors (e.g., Cetirizine, Prostaquinon) may be helpful, SNP analysis does not reveal any specific indication or contraindication toward their use.

Latanoprost			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
PTGFR-1	rs6686438	**GT**	Genetic Result: This prostaglandin F receptor (PTGFR) variant may be associated with an intermediate probability of treatment efficacy with latanoprost (prostaglandin analog). Interpretation: Prostaglandin F receptor (PTGFR) variants are related with Latanoprost treatment efficacy (prostaglandin analog) . Treatment recommendation: Consider treatment with Latanoprost at standard or higher doses.
PTGFR-2	rs1328441	**CC**	Genetic Result: This prostaglandin F receptor (PTGFR) variant may be associated with high probability of treatment efficacy with latanoprost (prostaglandin analog). Interpretation: Prostaglandin F receptor (PTGFR) variants are related with Latanoprost treatment efficacy (prostaglandin analog) . Treatment recommendation: Consider treatment with Latanoprost at standard doses.
PTGFR-3	rs10782665	**TT**	Genetic Result: This prostaglandin F receptor (PTGFR) variant may be associated with high probability of treatment efficacy with latanoprost (prostaglandin analog). Interpretation: Prostaglandin F receptor (PTGFR) variants are related with Latanoprost treatment efficacy (prostaglandin analog) . Treatment recommendation: Consider treatment with Latanoprost at standard doses.

Treatment efficacy with minoxidil

Minoxidil			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
PTGES2	rs13283456	**CT**	Genetic Result: Predisposition toward slightly reduced PGE2 levels. Interpretation: Lower PTGES2 activity may result in significantly lower PGE2 levels which is related to alopecia development. Minoxidil promotes hair growth by increasing the production of PGE2 via PTGES2. Treatment recommendation: Consider oral, topical, or combination minoxidil treatment at standard doses to stimulate PGE2 production.
SULT1A1	rs1042028	**GG**	Genetic result: Predisposition to normal SULT1A activity and therefore normal conversion of minoxidil into its active metabolite, minoxidil sulfate. Interpretation: Minoxidil Sulfotransferase Enzyme (SULT1A1) variants predict response to minoxidil treatment. Treatment recommendation(s): Treatment with oral or topical minoxidil at standard dosages is recommended.

Treatment efficacy with glucocorticoid anti-inflammatories

Glucocorticoides			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
GR-alpha	rs6198	**CT**	Genetic result: Predisposition to moderate resistance to glucocorticoid anti-inflammatory treatments. Interpretation: Glucocorticoid Receptor (GR or NR3C1) variants are associated with resistance or sensitivity to corticosteroids. Treatment recommendation: If glucocorticoid anti-inflammatory treatment is used, doses should be slightly increased or an alternative treatment with non-glucocorticoid anti-inflammatory drugs should be chosen.

Treatment efficacy with antiandrogenics

17-α estradiol			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
CYP19A1	rs2470152	**AA**	Genetic result: Predisposition to significantly reduced CYP19A1 expression. Interpretation: Lower Aromatase (CYP19A1) activity may be associated with reduced conversion of testosterone into estrogens and higher conversion into DHT (a known hair growth inhibitor). Treatment recommendation: Consider treatment with 17-α Estradiol (an aromatase inducer) at higher doses. Consider adjuvant anti-androgen therapies and additional modalities.

Dutasteride			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
SRD5A1	rs39848	**CT**	Genetic result: Predisposition slightly increased SRD5A1 activity. Interpretation: Steroid 5α-Reductase 1 (SRD5A1) variants are associated with increased SRD5A1 activity leading to increased DHT levels and hair growth inhibition. Treatment recommendation: Consider treatment with traditional doses of oral dutasteride. Consider topical dutasteride. Consider adding additional anti-androgen therapies or other modalities (e.g., pharmaceutical, phototherapy, nutraceutical, regenerative, etc.).

Finasteride			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
SRD5A2	rs523349	**CG**	Genetic result: Predisposition to slightly increased SRD5A2 activity. Interpretation: Steroid 5α-Reductase 2 (SRD5A2) variants are associated with increased SRD5A2 activity leading to increased DHT levels and hair growth inhibition. Treatment recommendation: Consider treatment with traditional doses of oral finasteride. Consider topical finasteride. Consider adding additional anti-androgen therapies or other modalities (e.g., pharmaceutical, phototherapy, nutraceutical, regenerative, etc.).

2. Hair care supplements

Vasodilatation and blood circulation

Circulation stimulators			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
ACE	rs4343	**AG**	Genetic result: Predisposition to slightly increased ACE activity. Interpretation: Increased Angiotensin-converting enzyme (ACE) activity may be associated with increased plasma levels of Angiotensin II, an extremely potent vasoconstrictor. Treatment recommendation: Consider normal doses of circulation stimulators such as Minoxidil, caffeine, Ginkgo Biloba, Ginseng or Arginine.

Collagen synthesis

Hair strengthening supplements			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
COL1A1	rs1800012	**CC**	Genetic result: Predisposition to normal collagen stability. Interpretation: Collagen, type I, alpha 1 (COL1A1) variants are associated with a normal collagen fiber. Treatment/dosage: SNP analysis does not indicate the necessity to supplement with hair strengthening composites.

Reduction of IGF-1 levels

Hair strengthening supplements			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
IGF1R	rs2229765	**AG**	Genetic result: Predisposition to moderately reduced IGF-1 levels. Interpretation: Insulin-like growth factor-I (IGF-I) variants are associated with lower plasma IGF-1 levels leading to hair loss. Treatment recommendation: A treatment with Igrantine-F1 and TrichoXidil (IGF-1 inducers) at normal doses would be recommended.

3. Vitamin, mineral and antioxidant supplements

Vitamins

Vitamin A			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
CRABP2	rs12724719	**GG**	Genetic result: Predisposition to normal retinoic acid intracellular transport. Interpretation: Cellular retinoic acid-binding protein 2 (CRABP2) variants are associated with normal retinoic acid (vitamin A) intracellular transport. Treatment/dosage: SNP analysis does not indicate the necessity to supplement with vitamin A.

Vitamin B7			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
BTD	rs13078881	**GG**	Genetic result: Predisposition to normal biotinidase activity. Interpretation: Biotinidase (BTD) variants are associated with normal biotin (vitamin B7) uptake from the diet. Treatment/dosage: SNP analysis does not indicate the necessity to supplement with vitamin B.

Vitamin C			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
SLC23A1	rs33972313	**CC**	Genetic result: Predisposition to higher vitamin C serum level. Interpretation: Solute carrier family 23 member 1 (SLC23A1) variants are associated with lower serum concentration of vitamin C. Treatment/dosage: SNP analysis does not indicate the necessity to supplement with vitamin C. Test for serum levels of vitamin C.

Vitamin B9			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
MTHFR	rs1801133	**GA**	Genetic result: Increased predisposition to folate deficiency. Interpretation: Methylene tetrahydrofolate reductase (MTHFR) variants are associated with risk of folate deficiency. Treatment/dosage: Folate supplementation should be considered. Test serum levels of folate prior to supplementation.

Vitamin D			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
GC	rs2282679	**TT**	Genetic result: Predisposition to normal vitamin D serum levels. Interpretation: Vitamin D-binding protein (GC or DBP) variants are associated with lower vitamin D serum level. Treatment/dosage: SNP analysis does not indicate the necessity to supplement with vitamin D. Test serum levels of vitamin D prior to supplementation.

Vitamin B12			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
FUT2	rs602662	**GG**	Genetic result: Predisposition to lower vitamin B12 serum level. Interpretation: Galactoside 2-alpha-L-fucosyltransferase 2 (FUT2) variants are associated lower vitamin B12 serum level. Treatment/dosage: Supplementation with vitamin B12 is recommended.

Vitamin E			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
ZPR1	rs964184	**CC**	Genetic result: Predisposition to lower serum tocopherol levels. Interpretation: Zinc Finger Protein ZPR1 variants are associated with low serum alpha-tocopherol (vitamin E) levels. Treatment/dosage: Supplementation with vitamin E is highly recommended. Test serum levels of vitamin E prior to supplementation.

Antioxidants

Antioxidants			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
NQO1	rs1800566	**AG**	Genetic result: Predisposition to lower NQO1 enzyme activity. Interpretation: NAD(P)H dehydrogenase [quinone] 1 (NQQ1) variants are associated with lower NQO1 enzyme activity and may have less effective protection against oxidative stress. Treatment/dosage: Supplementation with antioxidants would be recommended. Test serum levels of selenium prior to supplementation.

Minerals

Magnesium			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
MUC1	rs4072037	**TT**	Genetic result: Predisposition to higher magnesium serum level. Interpretation: Mucin 1, cell surface associated (MUC1) variants are associated with lower magnesium serum level. Treatment/dosage: SNP analysis does not indicate the necessity to supplement with magnesium. Test serum levels of magnesium prior to supplementation.

Zinc sulfate			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
SLC30A3	rs11126936	**GT**	Genetic result: Predisposition to higher serum zinc level. Interpretation: Solute carrier family 30 member 3 (SLC30A3) variants are associated with lower zinc blood level. Treatment/dosage: SNP analysis does not indicate the necessity to supplement with Zinc Sulfate. Test serum levels of zinc prior to supplementation.

Iron			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
TMPRSS6	rs855791	**AG**	Genetic result: Predisposition to slightly reduced serum levels of tranferrin and iron. Interpretation: Transmembrane protease, serine 6 (TMPRSS6 or matriptase-2) variants are associated with decreased serum levels of transferrin and iron. Treatment/dosage: Supplementation should be considered. Test serum levels of iron prior to supplementation.

Selenium			
Gene	**SNP (transition)**	**Patient genotype**	**Pharmacogenetic result**
DMGDH	rs921943	**CC**	Genetic result: Predisposition to lower selenium serum level. Interpretation: Dimethylglycine dehydrogenase (DMGDH) variants are associated with low selenium serum level. Treatment/dosage: Selenium supplementation should be considered. Test serum levels of selenium prior to supplementation.

Methodology and References:

https://acrobat.adobe.com/id/urn:aaid:sc:va6c2:01d266f4-3611-4fbb-a68c-0c7faa9f09c8

Together
we create the future
of personalizing medicine.

Contact Us:

(800) 226-2370

www.lifeextension.com

LIFE EXTENSION®
The Science of a Healthier Life™