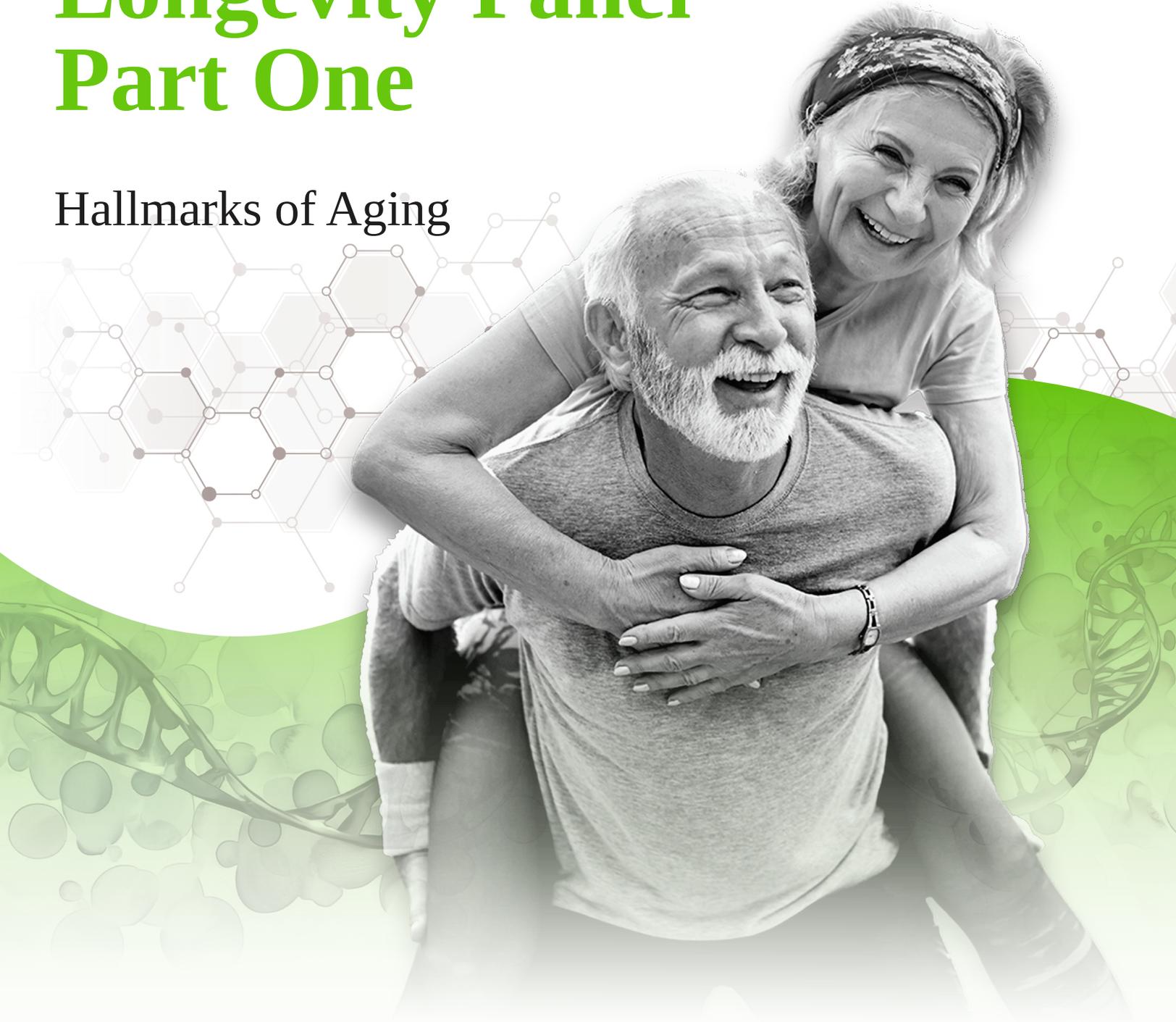




Longevity Panel Part One

Hallmarks of Aging



Ordering Provider: **Doogie Howser**

Accession Number: **EM-DEMO**

Patient Name: **John Doe**

Patient Gender: **Male**

DOB: **06/01/1975**

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The Testing Shop **Longevity Panel Part One: Hallmarks of Aging**

Aging is not merely the result of passing years—it’s a dynamic biological process influenced by your genetic programming, lifestyle, and environment. While chronological aging is inevitable, biological aging reflects how efficiently your body maintains function at the cellular level. The Longevity Panel Part One offers a window into this biological process by identifying key genetic markers that shape your long-term health potential.

This panel is rooted in the scientific framework of the 12 Hallmarks of Aging, focusing on four fundamental domains that govern resilience, repair, and sustained vitality. Understanding your genetic profile in these domains enables practitioners to deliver personalized strategies for improving energy, delaying degeneration, and supporting healthy longevity.



1. **Genome Stability & Telomere Health**

Your DNA constantly faces oxidative stress, toxins, and replication errors. This section examines genes that influence DNA repair and telomere integrity—key to slowing cellular aging and preserving long-term vitality. This includes:

- Genomic Maintenance Capacity
- Cellular Resilience Profile
- Telomere Health Potential

2. Cellular Energy & Mitochondrial Health

Mitochondria power every cell, and their efficiency affects energy, cognition, and metabolism. This category evaluates genes governing ATP production, oxidative balance, and mitochondrial renewal to gauge your energy resilience. This includes:

Mitochondrial Genetic Stability
Mitochondrial Biogenesis Potential

3. Inflammaging Susceptibility

Chronic, low-grade inflammation accelerates aging and disease risk. This section identifies variants in immune signaling that heighten inflammation susceptibility, guiding strategies to restore immune balance. This includes:

Inflammaging Risk Profile

4. Gut-Microbiome & Immune Cross-Talk

Genetic variations influence gut barrier strength, microbial balance, and immune communication. This section explores how your genes shape gut-immune interactions affecting inflammation, nutrient uptake, and overall health. This includes:

Microbiome-Host Interaction Potential

Why This Panel Matters

By identifying functional SNPs in these core aging pathways, the Longevity Panel Part One equips healthcare providers with actionable insights to guide personalized nutrition, targeted supplementation, lifestyle interventions, and follow-up testing. Risk levels classified as High (homozygous), Medium (heterozygous), or Low (wild type) help prioritize recommendations tailored to individual health goals and clinical context.

Whether your goal is to sustain energy, prevent age-related conditions, or better understand your body's aging blueprint, this panel lays the foundation for a proactive, precision-based longevity strategy.

Report Components

Each trait includes the following:

- Gene Information:** Relevant gene(s) and their known functional roles.
- SNP Information:** rsIDs, allele functions, and biological impact summaries.
- Risk Interpretation:** High, Medium, or Low risk categorization based on additive SNP scoring.
- Propensity Interpretation:** Categorized as High, Moderate, or Low propensity based on additive scoring of beneficial alleles.
- Nutritional Insight:** Evidence-based dietary suggestions where applicable.
- Lifestyle Insights:** Evidence-based insights on stress management, sleep hygiene, physical activity, energy production optimization, and toxin avoidance.
- Supplementation Insight:** Suggested nutrients and co-factors, dosage discretion lies with the practitioner.
- Lab to be Considered:** Suggested biomarkers and functional tests for follow-up and validation.

Analysis Summary

The Summary Analysis is designed to highlight the most impactful and clinically relevant insights derived from an individual's genetic and functional assessment. This summary distills the full set of category-specific recommendations by prioritizing those with the highest potential to influence health outcomes. In the summary analysis, recommendations that can be applied across more than one category are mostly emphasized, as these carry greater overall weight and broader therapeutic value. Recommendations are systematically scored and ranked based on their clinical significance, genetic relevance, and actionable benefit, ensuring that the highest-priority interventions are clearly highlighted for focused implementation. This approach enables individuals to identify the most important strategies to prioritize, making adherence more practical, targeted, and effective for long-term health improvement.



Risk Assessment

Microbiome-Host Interaction Potential	High Risk	Genomic Maintenance Capacity	Medium Propensity
Telomere Health Potential	Medium Risk	Mitochondrial Genetic Stability	Medium Risk
Mitochondrial Biogenesis Potential	Medium Risk	Inflammaging Risk Profile	Medium Risk
Cellular Resilience Profile	High Propensity		

Risk Assessment & Interventions by Category

Genome Stability & Telomere Health	Medium Risk	Cellular Energy & Mitochondrial Health	Medium Risk
Genomic Maintenance Capacity	Medium Propensity	Mitochondrial Genetic Stability	Medium Risk
Cellular Resilience Profile	High Propensity	Mitochondrial Biogenesis Potential	Medium Risk
Telomere Health Potential	Medium Risk		
Inflammaging Susceptibility	Medium Risk	Gut-Microbiome & Immune Cross-Talk	High Risk
Inflammaging Risk Profile	Medium Risk	Microbiome-Host Interaction Potential	High Risk

Recommendations & Monitoring Schedule

Lifestyle Considerations



1. Do bodyweight strength training twice a week (e.g., squats, push-ups)- preserves muscle mass and supports metabolic health as you age.
2. Practice stress-modulating habits like meditation, yoga, or breathwork at least 3–4 times a week to reduce cortisol and oxidative burden.
3. Structured aerobic interval training (HIIT) to be followed 2–3 times weekly.
4. Avoid caffeine after 2 p.m. to prevent sleep disturbances- poor sleep elevated IL-6 and TNF- α .
5. Establish a consistent sleep routine aiming for 7–8 hours per night, preferably aligned with natural circadian rhythms (sleep by 10:30 PM), as melatonin supports DNA protection.

Nutritional Insights



1. Polyphenol-rich fruits (pomegranates, dark berries), beetroot to be added- supports mitochondrial biogenesis and nitric oxide production.
2. Add extra virgin olive oil- oleocanthal mimics ibuprofen anti-inflammatory effects.
3. Consume fermented foods (yogurt, kefir, sauerkraut, or kimchi) at least 3 times per week to enhance gut health and regulate inflammation.
4. Add steel-cut oats- high in soluble fiber, linked to longer telomeres and reduced inflammation.
5. Include 1 tablespoon of ground flaxseeds or chia seeds daily in smoothies, salads, or yogurt for anti-inflammatory benefits and omega-3s.

Supplements To Consider



1. Resveratrol
 2. Curcumin
 3. Omega-3 fatty acids (EPA/DHA)
 4. Glutathione
 5. Green Tea Extract (EGCG)
- (Please consult a healthcare professional or a physician before starting any supplements.)

Other Labs To Consider



1. Fasting insulin and HOMA-IR
2. Biological Age Test
3. 8-OHdG: Marker of oxidative DNA damage
4. hs-CRP
5. Total Homocysteine



Genome Stability & Telomere Health

Genome Stability & Telomere Health examines the genetic and environmental factors that influence how efficiently the body ages and maintains resilience. This category includes the first two Hallmarks of Aging—Genomic Maintenance Capacity and Telomere Attrition—and focuses on preserving DNA integrity, telomere length, and cellular function. It covers three key subcategories: Genomic Maintenance Capacity, Cellular Resilience Profile, and Telomere Health Potential, which together reflect the body's ability to repair damage, adapt to stress, and sustain long-term biological stability.



Genomic Maintenance Capacity

Genomic Maintenance Capacity measures how specific genetic variations contribute to longevity by promoting cellular resilience, efficient DNA repair, and metabolic stability. Individuals with favorable genetic markers may have enhanced lifespan potential, while those with risk variants might experience accelerated aging or increased susceptibility to age-related diseases.

Low Propensity

▶ Medium Propensity

High Propensity



Marker : LINC02227 | rsID : rsXXXX | Patient Genotype : CC

The individual carries genetic variations that suggest a low propensity for Genomic Maintenance Capacity, implying less consistent biological regulation of aging. This may lead to greater variability in aging outcomes based on genetic influence.



Marker : ARSA - Y_RNA | rsID : rsXXXX | Patient Genotype : GG

The individual's genetic profile indicates a lower propensity for Genomic Maintenance Capacity, suggesting reduced efficiency in cellular upkeep and RNA regulation. Suboptimal function of enzymes such as arylsulfatase A (ARSA), which degrade sulfatides crucial for myelin health, may contribute to gradual nervous system decline with age.



Marker : GABRB3 | rsID : rsXXXX | Patient Genotype : TC

The individual's genetic profile suggests a moderate propensity for Genomic Maintenance Capacity, reflecting partial support for neural regulatory balance. Variations in genes such as GABRB3, involved in inhibitory neurotransmission, may slightly influence the pace of age-related brain function changes.



Marker : MIR6078 - LINC00702 | rsID : rsXXXX | Patient Genotype : GG

The individual has a low propensity for Genomic Maintenance Capacity, possibly due to less robust RNA-mediated gene regulation.



Marker : ADGRD1 | rsID : rsXXXX | Patient Genotype : TC

The individual exhibits a medium propensity for Genomic Maintenance Capacity, contributing to moderately stable age-related signaling.



Marker : ZNF516 | rsID : rsXXXX | Patient Genotype : GG

The individual's profile reflects low propensity for Genomic Maintenance Capacity via weaker metabolic consistency.



Marker : MAD1L1 | rsID : rsXXXX | Patient Genotype : AA

The individual has a low genetic predisposition for Genomic Maintenance Capacity in this region, which may affect long-term genomic consistency.



Marker : CDH4 | rsID : rsXXXX | Patient Genotype : TC

The individual's profile indicates moderate support for Genomic Maintenance Capacity, tied to average cellular cohesion.



Marker : LINC00299 | rsID : rsXXXX | Patient Genotype : AA

The genetic profile reflects a high propensity for Genomic Maintenance Capacity via regulation of brain-associated gene networks, supporting sustained neurological aging.



Marker : SSTR3 - RAC2 | rsID : rsXXXX | Patient Genotype : TC

The individual's analysis shows moderate support for Genomic Maintenance Capacity via balanced inflammatory and metabolic signaling.



Marker : TBC1D22A | rsID : rsXXXX | Patient Genotype : GG

The individual's profile suggests a low propensity for Genomic Maintenance Capacity, linked to less regulated intracellular trafficking.



Marker : RPL26P3 - LINC02300 | rsID : rsXXXX | Patient Genotype : TC

The individual carries a medium propensity for Genomic Maintenance Capacity via steady transcriptional support.



Marker : NRDE2 | rsID : rsXXXX | Patient Genotype : GG

The individual's profile suggests low support for genetic regulation stability, affecting the continuity of aging patterns.



Marker : CRYBG1 | rsID : rsXXXX | Patient Genotype : CC

A high propensity for Genomic Maintenance Capacity may be driven by structural protein support, enhancing cellular resilience.



Marker : GNG5P1 - PRR18 | rsID : rsXXXX | Patient Genotype : AA

Genetic evidence suggests a high propensity for Genomic Maintenance Capacity via chromatin and regulatory element stability, reinforcing long-term genetic coherence.



Marker : COL5A1 | rsID : rsXXXX | Patient Genotype : AG

The individual exhibits medium support for Genomic Maintenance Capacity based on structural extracellular matrix balance.



Marker : SDAD1 | rsID : rsXXXX | Patient Genotype : TC

The individual's profile indicates moderate propensity for Genomic Maintenance Capacity through stable cell maintenance.

Risk Assessment



The individual's genetic profile suggests a moderate predisposition to Genomic Maintenance Capacity, meaning that while some protective genetic variations are present, other factors may contribute to accelerated aging or increased health risks over time. A gradual decline in cellular resilience, DNA repair efficiency, or metabolic regulation may occur, potentially influencing longevity and overall healthspan.

Lifestyle Considerations



1. Establish a consistent sleep routine aiming for 7–8 hours per night, preferably aligned with natural circadian rhythms (sleep by 10:30 PM), as melatonin supports DNA protection.
2. Practice stress-modulating habits like meditation, yoga, or breathwork at least 3–4 times a week to reduce cortisol and oxidative burden.
3. Incorporate fasted morning walks or low-impact cardio (30 mins) to stimulate mitochondrial health, cellular regeneration, and metabolic balance.

Nutritional Insights



1. Add daily servings of dark leafy greens (spinach, mustard greens, or watercress) for folate, magnesium, and antioxidants to support DNA repair.
2. Include 1 tablespoon of ground flaxseeds or chia seeds daily in smoothies, salads, or yogurt for anti-inflammatory benefits and omega-3s.
3. Consume fermented foods (yogurt, kefir, sauerkraut, or kimchi) at least 3 times per week to enhance gut health and regulate inflammation.
4. Replace refined grains (white rice, white bread) with whole ancient grains (quinoa, amaranth, millet) for added fiber, vitamins, and minerals.
5. Eliminate or reduce refined white sugar and sugary beverages to decrease oxidative stress and cellular aging.

Supplements To Consider



1. Green Tea Extract (EGCG)
2. Curcumin
3. Resveratrol
4. Zinc + Selenium
5. Folate (5-MTHF) and Vitamin B12 (methylcobalamin)

(Please consult a healthcare professional or your physician before starting any supplements.)

Other Labs To Consider



1. 8-OHdG
2. hs-CRP, Ferritin, IL-6
3. Folate and Homocysteine
4. Thyroid Panel + Reverse T3
5. Lipid Panel (including oxidized LDL)
6. Micronutrient Testing: To check B12, magnesium, zinc, selenium, and vitamin E.
7. Biological Age Testing or Telomere Length Assays

Cellular Resilience Profile

Cellular Resilience Profile refers to the genetic ability of an individual to maintain health, youthful skin, and functional stability with age, despite exposure to environmental and physiological stressors. This profile involves the regulation of key biological processes such as mRNA stability, immune function, pigmentation, oxidative stress response, lipid metabolism, mitochondrial energy production, and cellular repair mechanisms. These processes determine how effectively the body adapts to aging challenges—impacting skin integrity, pigmentation, brain health, immune defense, and metabolic balance. Disruptions in these systems can accelerate aging, whereas enhanced function contributes to a delayed onset of age-related changes and diseases. Cellular Resilience Profile reflects a complex interplay of genetic factors that support longevity, skin vitality, and resistance to degenerative decline.

Low Propensity

Medium Propensity

▶ High Propensity



Marker : PABPC4, PABPC4-AS1 | rsID : rsXXXX | Patient Genotype : GG

The individual's genetic profile indicates a high propensity for Cellular Resilience Profile through efficient mRNA regulation and stress-adaptive expression. This may support sustained cellular function with age.



Marker : TYR | rsID : rsXXXX | Patient Genotype : GG

The individual carries genetic indicators of high Cellular Resilience Profile via enhanced melanin production and antioxidant defense capacity.



Marker : IRF4 | rsID : rsXXXX | Patient Genotype : CC

The individual's genetic profile shows a high propensity for Cellular Resilience Profile through adaptive immune regulation and transcriptional flexibility.



Marker : RNU6-699P - RNU1-63P | rsID : rsXXXX | Patient Genotype : TC

The individual's profile suggests a balanced, moderate level of support for Cellular Resilience Profile through RNA-based regulation.



Marker : LPL | rsID : rsXXXX | Patient Genotype : AA

The individual's genetic profile suggests a high propensity for Cellular Resilience Profile through efficient lipid metabolism and cardiovascular support.



Marker : TOMM40 - APOE | rsID : rsXXXX | Patient Genotype : GG

The individual carries a genetic profile indicating high Cellular Resilience Profile through strong mitochondrial and lipid-related support.



Marker : ATXN2 | rsID : rsXXXX | Patient Genotype : TT

The individual's genetic profile suggests lower Cellular Resilience Profile, potentially due to less effective RNA stability and stress adaptation. Impaired regulation of this gene may reduce protection against cellular stress, increasing susceptibility to age-related neurological challenges.



Marker : LINC01875 - TMEM18 | rsID : rsXXXX | Patient Genotype : CC

The individual carries variants linked to a lower propensity for Cellular Resilience Profile, possibly due to reduced metabolic efficiency and gene regulation. Altered activity in LINC01875 and TMEM18 may compromise the ability to sustain balanced aging processes.



Marker : NECTIN2 | rsID : rsXXXX | Patient Genotype : GG

The individual's genes suggest a high propensity for Cellular Resilience Profile by promoting cellular cohesion and immune integrity. Optimal NECTIN2 function may help maintain vascular and epithelial barriers, supporting healthy aging.



Marker : APOE | rsID : rsXXXX | Patient Genotype : TC

The individual's profile reflects moderate Cellular Resilience Profile potential related to lipid transport and cognitive support.



Marker : CDKN2B-AS1 | rsID : rsXXXX | Patient Genotype : TC

The individual exhibits moderate support for Cellular Resilience Profile via balanced cell cycle control.



Marker : SUCLA2 | rsID : rsXXXX | Patient Genotype : TC

The individual shows a moderate propensity for Cellular Resilience Profile based on steady mitochondrial function.

Risk Assessment



The individual's genetic profile suggests a strong capacity to resist the effects of biological aging. Genetic strengths may be present in key areas such as cellular repair, oxidative stress response, and energy metabolism, supporting long-term physiological resilience.

Lifestyle Considerations



1. Set consistent sleep and wake times, ideally aligning with natural light cycles, to support circadian-regulated melatonin production and overnight DNA repair.
2. Schedule a quarterly “toxin audit” — revisit your home, body care, and cleaning products to identify and replace any high-chemical items with safer alternatives.

Nutritional Insights



1. Include omega-3-rich seeds (ground flax or chia) a few times per week for cell membrane health and anti-inflammatory balance.
2. Add fresh herbs and citrus zest (lemon or orange peel) regularly for melanin modulation, liver detox, and antioxidant support.
3. Enjoy deeply colored fruits and vegetables (purple carrots, golden beets, red lettuce) to maintain DNA stability and skin glow.

Supplements To Consider



Supplementation may not be necessary unless specific deficiencies are identified. Focus on obtaining nutrients through a varied and balanced diet.

Other Labs To Consider



Routine biomarker monitoring and stress response evaluations may help reinforce the individual's current low-risk Cellular Resilience Profile status and support adaptive capacity and healthy aging.

Telomere Health Potential

Telomere Health Potential describes an individual's genetic predisposition to telomere shortening and instability, which can influence cellular aging, DNA repair efficiency, and overall lifespan potential. Certain genetic variations may accelerate telomere attrition, increasing the risk of age-related diseases and reduced regenerative capacity, while protective variants contribute to enhanced genomic stability and longevity.



Marker : TERT | rsID : rsXXXX | Patient Genotype : AA

The individual's evaluation shows no significant variants in the TERT gene, indicating a low genetic risk for telomere-related concerns. This suggests that telomeres are likely well-maintained, with no notable genetic factors affecting telomere health potential.



Marker : TERT | rsID : rsXXXX | Patient Genotype : AG

The individual's TERT genotype suggests a moderate influence on telomerase function. While telomere maintenance is mostly intact, there may be a mild predisposition toward reduced telomere health potential under prolonged cellular or environmental stress.



Marker : TERT | rsID : rsXXXX | Patient Genotype : CC

The individual carries a low-risk TERT variant that supports healthy telomerase activity. This suggests effective maintenance of telomere length and a low genetic risk for telomere-related aging mechanisms.



Marker : SENP7 | rsID : rsXXXX | Patient Genotype : TC

The individual's evaluation suggests a moderate-risk variant in the SENP7 gene that may moderately affect telomere-related cellular processes. This may slightly lower telomere health potential and influence telomere maintenance under stress.



Marker : NAMPT-AS1 - LARP1BP2 | rsID : rsXXXX | Patient Genotype : AA

The individual's results suggest a high-risk variant in the NAMPT-AS1 – LARP1BP2 region, potentially affecting regulatory roles in cellular resilience and telomere-related pathways. This might lower telomere health potential and heighten susceptibility to telomere-related imbalances under specific conditions.



Marker : SNTB1 | rsID : rsXXXX | Patient Genotype : AG

The individual's findings indicate a medium-risk variant in the SNTB1 gene, with a slight potential to affect cellular processes linked to telomere maintenance. This may modestly influence telomere health potential, though the effect is generally mild and manageable through healthy lifestyle choices.

Risk Assessment



The individual's results suggest a moderate predisposition to telomere shortening, which may gradually affect cellular longevity and DNA repair mechanisms over time. Although the risk of premature aging is not significantly high, lifestyle factors such as smoking, poor diet, chronic stress, and physical inactivity may influence telomere maintenance and overall genomic stability.

Lifestyle Considerations



1. Do bodyweight strength training twice a week (e.g., squats, push-ups)- preserves muscle mass and supports metabolic health as you age.
2. Keep your bedroom dark, quiet, and cool (around 18–20°C)- ideal environment for melatonin production and deep sleep.
3. Limit caffeine after 2 p.m.- prevents it from interfering with slow-wave sleep needed for repair.

Nutritional Insights



1. Add peanuts- source of niacin and resveratrol; supports mitochondrial and cellular health.
2. Add steel-cut oats- high in soluble fiber, linked to longer telomeres and reduced inflammation.
3. Add avocados- provide healthy fats and glutathione precursors to reduce oxidative stress.
4. Remove packaged snack foods- contain preservatives and poor-quality fats linked to telomere attrition.
5. Replace butter with extra virgin olive oil- provides oleocanthal and monounsaturated fats that reduce inflammation.

Supplements To Consider



1. Resveratrol & Pterostilbene
2. Curcumin
3. Coenzyme Q10 (Ubiquinol)

(Please consult a healthcare professional or your physician before starting any supplements.)

Other Labs To Consider



1. hs-CRP (High Sensitivity CRP)
2. Homocysteine
3. Ferritin
4. Triglycerides/ HDL ratio
5. Liver Enzymes (ALT, AST, GGT)



Cellular Energy & Mitochondrial Health

Cellular Energy & Mitochondrial Health refers to the impaired function of mitochondria, the energy-producing organelles responsible for cellular respiration and ATP production. Genetic variations affecting mitochondrial efficiency can lead to reduced energy metabolism, increased oxidative stress, and accelerated cellular aging. This dysfunction is associated with neurodegenerative diseases, metabolic disorders, and overall lifespan reduction, making mitochondrial health a key factor in aging and longevity.



Mitochondrial Genetic Stability

Mitochondrial Genetic Stability refers to genetic variations influencing mtDNA heteroplasmy, where mitochondria carry multiple coexisting genetic sequences. While heteroplasmy can impact mitochondrial function and aging, it also plays a role in evolutionary adaptation. Nuclear genes regulate heteroplasmy levels, affecting mtDNA stability, replication, and transcription.



Marker : TFAM | rsID : rsXXXX | Patient Genotype : TG

The individual's evaluation suggests a medium-risk variant in the TFAM gene, which could have a mild effect on mitochondrial DNA replication and stability. This may moderately influence Mitochondrial Genetic Stability, though impacts are often manageable through support for mitochondrial health.



Marker : BMP2 - LINC01428 | rsID : rsXXXX | Patient Genotype : TT

The individual's results reveal a high-risk variant in the BMP2 or LINC01428 gene, which may impact regulatory roles in mitochondrial dynamics. This could slightly reduce Mitochondrial Genetic Stability, elevating the likelihood of mitochondrial imbalance under stress conditions.



Marker : CIT | rsID : rsXXXX | Patient Genotype : GG

The individual's findings show no significant variants in the CIT gene, suggesting a low genetic risk related to Mitochondrial Genetic Stability. This indicates that mitochondrial regulatory pathways are likely operating normally without influence from genetic predispositions.

Risk Assessment



The individual's results indicate a moderate predisposition to changes in mitochondrial heteroplasmy levels, suggesting that although mitochondrial DNA (mtDNA) function may remain relatively stable, certain genetic variations may contribute to mild inefficiencies over time. This may slightly increase susceptibility to imbalances in energy metabolism, oxidative stress, or mitochondrial-related aging processes.

Lifestyle Considerations



1. Structured aerobic interval training (HIIT) to be followed 2–3 times weekly.
2. Daily mindful stress reduction (yoga, meditation) is encouraged– reduces mitochondrial oxidative stress.

Nutritional Insights



1. Polyphenol-rich fruits (pomegranates, dark berries), beetroot to be added– supports mitochondrial biogenesis and nitric oxide production.
2. Regular consumption of green tea to be included– rich in EGCG, enhancing mitochondrial efficiency.
3. Intake of high glycemic foods and processed sugars should be strictly eliminated.
4. Sugary snacks to be replaced with mixed nuts or dark chocolate (>75%).

Supplements To Consider



1. Coenzyme Q10 (Ubiquinol)
2. Alpha-Lipoic Acid
3. Magnesium (glycinate or citrate)
4. Resveratrol

(Please consult a healthcare professional or your physician before starting any supplements.)

Other Labs To Consider



1. Vitamin D (25-OH)
2. Serum CoQ10
3. hs-CRP
4. Fasting insulin and HOMA-IR

Mitochondrial Biogenesis Potential

Mitochondrial Biogenesis Potential refers to genetic variations influencing mtDNA copy number (mtCN), which affects cellular energy production, oxidative phosphorylation efficiency, and aging-related decline. Nuclear loci regulate mtDNA replication and maintenance, with certain variants associated with mtCN stability, aging-related reductions, and metabolic health. Understanding these variations helps assess individual susceptibility to mitochondrial dysfunction and related diseases.



Marker : BAK1 - GGNBP1 | rsID : rsXXXX | Patient Genotype : TG

The individual's evaluation suggests a medium-risk variant in the BAK1 or GGNBP1 gene, which may mildly affect mitochondrial DNA replication or maintenance. This reflects a modest reduction in Mitochondrial Biogenesis Potential, with a small potential for copy number variation that is generally manageable.



Marker : RPL15P11 - STMP1 | rsID : rsXXXX | Patient Genotype : TG

The individual's results reveal a medium-risk variant in the RPL15P11 – STMP1 region, indicating a subtle influence on mitochondrial processes. This may result in minor fluctuations in Mitochondrial Biogenesis Potential under specific physiological or environmental conditions.



Marker : CDK6 | rsID : rsXXXX | Patient Genotype : AG

The individual's findings show a medium-risk variant in the CDK6 gene, which may have a mild effect on mitochondrial biogenesis. While Mitochondrial Biogenesis Potential may be slightly reduced, the overall impact is minimal and often influenced by broader aspects of cellular health.



Marker : AK3 - ECM1P1 | rsID : rsXXXX | Patient Genotype : TC

The individual's evaluation suggests a medium-risk variant in the AK3 – ECM1P1 region, with a slight potential to influence mitochondrial DNA levels. This may reflect a moderate influence on Mitochondrial Biogenesis Potential, typically manageable through support for energy metabolism and mitochondrial function.



Marker : GP6, GP6-AS1 | rsID : rsXXXX | Patient Genotype : AA

The individual's findings show no significant variants in the GP6 – GP6-AS1 region, indicating a low risk for mitochondrial DNA copy number variation. This supports the presence of stable mitochondrial regulatory function and biogenesis control.

Risk Assessment



The individual's results indicate a moderate susceptibility to mitochondrial DNA (mtDNA) copy number changes, implying that while mitochondrial function is generally maintained, genetic factors may influence mtDNA replication and stability. Gradual changes in mtDNA levels could affect energy production, oxidative stress response, and overall metabolic health.

Lifestyle Considerations



1. Structured aerobic and resistance training to be followed.
2. Consistent sleep patterns are to be prioritized.

Nutritional Insights



1. Frequent consumption of cruciferous vegetables (broccoli, Brussels sprouts) and fatty fish (salmon) is encouraged
2. Sugars and ultra-processed foods should be limited.
3. White rice/pasta to be replaced with quinoa or whole grains.

Supplements To Consider



1. Coenzyme Q10
2. Omega-3 fatty acids (EPA/DHA)
3. Vitamin E

(Please consult a healthcare professional or your physician before starting any supplements.)

Other Labs To Consider



1. Vitamin D (25-OH)
2. Serum CoQ10
3. Homocysteine



Inflammaging Susceptibility

Inflammaging Susceptibility is a prolonged, low-grade immune response that contributes to aging and age-related diseases by causing tissue damage, oxidative stress, and impaired cellular function. It is linked to conditions like cardiovascular disease, neurodegeneration, and metabolic disorders, all of which impact lifespan and healthspan. Understanding genetic factors influencing inflammation helps identify risks for accelerated aging and chronic diseases. By assessing these variations, individuals can adopt personalized lifestyle and dietary strategies to reduce inflammation, support immune balance, and promote healthy aging.



Inflammaging Risk Profile

The body's ability to regulate inflammation is a key determinant of longevity. The immune system relies on a delicate balance between pro-inflammatory and anti-inflammatory signals to maintain homeostasis. Genetic variations can influence how efficiently the body resolves inflammation, impacting susceptibility to chronic conditions. Studying inflammatory response regulation provides insight into how effectively the body adapts to stress, repairs cellular damage, and maintains immune resilience over time.



Marker : MFHAS1, CLDN23 | rsID : rsXXXX | Patient Genotype : CC

The individual carries a low-risk MFHAS1 genotype, supporting well-balanced immune regulation. Given this gene's role in inflammation control, the profile indicates a reduced Inflammaging Risk Profile and a lower likelihood of immune overactivation or chronic inflammatory responses.



Marker : BMPR2 | rsID : rsXXXX | Patient Genotype : CC

The individual has a BMPR2 genotype associated with effective TGF-β signaling and vascular stability. This supports healthy vascular-immune interactions and suggests a low Inflammaging Risk Profile related to vascular inflammation.



Marker : HLADRB1- HLADQA1 | rsID : rsXXXX | Patient Genotype : AA

The individual carries a low-risk HLA-DRB1 genotype, which supports balanced antigen presentation and regulated immune defense. This lowers the Inflammaging Risk Profile, reducing the risk of inflammation due to immune system overactivity.



Marker : CELF1 | rsID : rsXXXX | Patient Genotype : CC

The individual carries a low-risk CELF1 variant, which supports proper RNA processing and cytokine regulation. This contributes to a balanced immune response under stress, resulting in a low Inflammaging Risk Profile.



Marker : RPL35AP28-BCDIN3D | rsID : rsXXXX | Patient Genotype : AG

The individual's evaluation suggests a medium-risk variant in the RPL35AP28 – BCDIN3D region, which may mildly affect inflammatory regulation pathways. This poses a minor but manageable increase in the individual's Inflammaging Risk Profile.



Marker : GCKR | rsID : rsXXXX | Patient Genotype : CC

The individual carries a low-risk GCKR variant that supports effective glucokinase activity. This contributes to stable glucose metabolism and lowers the Inflammaging Risk Profile by minimizing inflammation related to metabolic imbalance.



Marker : ADCY9 | rsID : rsXXXX | Patient Genotype : TT

The individual carries a high-risk genotype in ADCY9, a gene encoding an enzyme that modulates inflammation through cAMP signaling. Disruption in this pathway may contribute to increased immune activation and a heightened Inflammaging Risk Profile.



Marker : MIR22HG | rsID : rsXXXX | Patient Genotype : TT

The individual's results indicate a high-risk genotype in MIR22HG, a host gene for miR-22, which regulates inflammatory gene expression via microRNA pathways. This variant may disrupt miRNA function, elevating the Inflammaging Risk Profile.



Markers : CD33, LOC107985327 | rsID : rsXXXX | Patient Genotype : CC

The individual carries a high-risk CD33 genotype, which may impair immune cell regulation. This dysregulation may lead to chronic inflammation and overactive immune responses, increasing the individual's Inflammaging Risk Profile and potential vulnerability to neuroinflammatory or neurodegenerative conditions.



Marker : GCKR | rsID : rsXXXX | Patient Genotype : CC

The individual's GCKR genotype supports stable glucokinase regulation and efficient metabolic function, minimizing metabolic inflammation and supporting a low Inflammaging Risk Profile.



Marker : HPR-TXNL4B | rsID : rsXXXX | Patient Genotype : GG

The individual's genetic profile indicates a low-risk genotype in HPR and TXNL4B, which supports oxidative stress control and efficient RNA splicing. This contributes to redox balance and a lower Inflammaging Risk Profile.



Marker : ERCC2 | rsID : rsXXXX | Patient Genotype : TG

The individual's genetic profile suggests moderate risk in DNA repair and inflammatory regulation. Variants in ERCC2 may impair stress response mechanisms, modestly increasing cellular stress and the Inflammaging Risk Profile.



Marker : TRIB1AL-TRIB1 | rsID : rsXXXX | Patient Genotype : GG

The individual's findings show no significant variants in the TRIB1AL – TRIB1 region, indicating a low genetic risk for inflammation-related regulatory disruptions. This suggests a stable Inflammaging Risk Profile.



Marker : IL6R | rsID : rsXXXX | Patient Genotype : CC

The individual carries a low-risk IL6R variant, which supports balanced IL-6 signaling. This may help prevent excessive inflammatory signaling and contributes to a reduced Inflammaging Risk Profile.



Marker : LEPR | rsID : rsXXXX | Patient Genotype : AA

The individual's results indicate a high-risk genotype associated with disrupted leptin signaling, which may impair energy balance and promote chronic low-grade inflammation, thereby raising the Inflammaging Risk Profile.



Marker : LEF1 | rsID : rsXXXX | Patient Genotype : AC

The individual's genetic profile suggests a moderate risk of immune dysregulation. Variants in LEF1 may partially affect T-cell function and inflammatory control, contributing to a moderately elevated Inflammaging Risk Profile.

Risk Assessment



The individual's genetic results suggest a moderate tendency toward chronic inflammation. While the overall inflammatory response is balanced, certain variants may predispose the immune system to occasional overactivity, potentially resulting in low-grade tissue inflammation over time.

Lifestyle Considerations



1. Try dancing or hiking once a week for cardiovascular support and enjoyment- helps maintain exercise adherence through engaging movement
2. Write in a gratitude or stress journal at night- supports emotional processing and lowers inflammatory response from rumination.
3. Avoid caffeine after 2 p.m. to prevent sleep disturbances- poor sleep elevated IL-6 and TNF- α .

Nutritional Insights



1. Include wild-caught salmon- rich in EPA and DHA, known to resolve inflammation via resolvins.
2. Add extra virgin olive oil- oleocanthal mimics ibuprofen anti-inflammatory effects.
3. Take turmeric (with black pepper)- curcumin inhibits pro-inflammatory cytokines like IL-6 and TNF- α .
4. Remove margarine- source of hydrogenated oils and trans fats that impair vascular and immune health.
5. Replace cow's milk with unsweetened almond milk- easier on digestion, lower in inflammatory casein and lactose.

Supplements To Consider



1. Omega-3 Fatty Acids (EPA/DHA)
2. Glutathione
3. Curcumin
4. Quercetin
5. Resveratrol

(Please consult a healthcare professional or your physician before starting any supplements.)

Other Labs To Consider



1. hs-CRP
2. Homocysteine
3. Triglycerides/HDL
4. ALT/AST
5. Ferritin
6. IL-6
7. GGT
8. oxLDL
9. Advanced Lipid Panel



Gut-Microbiome & Immune Cross-Talk

Gut-Microbiome & Immune Cross-Talk refers to imbalances in the gut microbiome caused by genetic, environmental, and lifestyle factors, affecting overall health and metabolic functions. This category focuses on Microbiome-Host Interaction Potential, exploring how host genetics influence the composition, stability, and function of gut bacteria. Variations in microbial diversity have been linked to immune response, digestion, metabolic health, and disease susceptibility



Microbiome-Host Interaction Potential

Microbiome-Host Interaction Potential refers to an individual's genetic predisposition to variations in gut microbiome composition and bacterial abundance. Host genetic variation influences the relative abundance of key bacterial taxa, impacting digestion, immune function, metabolism, and disease susceptibility. This trait explores how genetic factors regulate microbial diversity, with potential implications for obesity, inflammatory diseases, and gut health stability.



Marker : NELL2 | rsID : rsXXXX | Patient Genotype : TC

The individual's genetic variation in NELL2 indicates a moderate risk of altered gut-brain axis signaling. This may gradually influence Microbiome-Host Interaction Potential, potentially affecting microbiome composition and gastrointestinal health over time.



Marker : TEKT5 | rsID : rsXXXX | Patient Genotype : AG

The individual's genetic variation in TEKT5 indicates a moderate risk of epithelial dysfunction, which may subtly impact Microbiome-Host Interaction Potential and contribute to mild dysbiosis under certain conditions.



Marker : RNU7-66P - RNA5SP208 | rsID : rsXXXX | Patient Genotype : AA

The individual's variation in the RNU7-66P – RNA5SP208 region reflects a higher risk of impaired non-coding RNA function. This may disrupt gene expression linked to microbiome regulation, reducing Microbiome-Host Interaction Potential and contributing to dysbiosis.



Marker : RNU6-684P - CEND1P1 | rsID : rsXXXX | Patient Genotype : TC

The individual's genetic variation in regulatory RNA regions indicates a moderate risk of disrupted RNA function. This may gradually influence Microbiome-Host Interaction Potential, affecting microbial dynamics and gastrointestinal resilience.



Marker : MCPH1 | rsID : rsXXXX | Patient Genotype : GG

The individual's MCPH1 variant suggests a higher risk of epithelial cell stress and weakened coordination with the gut microbiota. This may contribute to dysbiosis and decreased Microbiome-Host Interaction Potential.



Marker : ZFPM2 | rsID : rsXXXX | Patient Genotype : GG

The individual's genetic variation in ZFPM2 suggests a higher risk of disrupted immune-gut interactions. This may impair Microbiome-Host Interaction Potential and increase susceptibility to gut inflammation and microbial imbalance.



Marker : GLI3 | rsID : rsXXXX | Patient Genotype : CC

The individual carries a low-risk variant in GLI3, which supports healthy intestinal barrier maintenance and consistent microbiota signaling. This indicates strong Microbiome-Host Interaction Potential and protective mucosal function.

Risk Assessment



The individual's genetic profile indicates a higher susceptibility to imbalances in gut microbiome diversity, suggesting greater sensitivity to genetic influences on microbiota composition. This may impact digestion, immune regulation, and metabolic health, increasing the risk for gut dysbiosis, obesity, inflammatory conditions, and other microbiome-related disorders.

Lifestyle Considerations



1. Do 2 digital detox evenings per week (no screens after sunset).
2. Use fluoride-free toothpaste and natural mouthwash.
3. Walk barefoot on grass or garden regularly.
4. Practice 10 mins of slow yoga, qigong, or tai chi 3x/week.
5. Use glass or stainless-steel water bottles.

Nutritional Insights



1. Add inulin-rich foods (e.g., jicama, sunchokes, chicory root) weekly to support Bifidobacteria and microbiome stability.
2. Eat seaweed/algae (e.g., nori, wakame, chlorella) once a week to support gut immunity and beneficial strains like Bacteroides uniformis.
3. Use polyphenol-rich herbs (rosemary, thyme, oregano, turmeric) regularly to gently modulate gut microbiota.
4. Include homemade vegetable broth or miso soup 2–3 times per week for gut lining hydration and microbial pH balance.
5. Limit added sugars to under 25g/day to prevent imbalance and maintain microbial diversity.

Supplements To Consider



1. Probiotic (10–25 billion CFU)
2. Aloe Powder
3. Digestive enzyme blend with meals
4. Low-dose inulin or acacia fiber
5. Vitamin D3 + K2

(Please consult a healthcare professional or your physician before starting any supplements.)

Other Labs To Consider



1. Micronutrient panel – Especially for zinc, magnesium, vitamin D
hs-CRP and Ferritin
2. GI Stool Test
3. Food sensitivity panel
4. Salivary IgA

Explanation Video



Segment 1 - <https://vimeo.com/1147819048>

Segment 2 - <https://vimeo.com/1147819666>

Segment 3 - <https://vimeo.com/1147820793>

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Disclaimers

Methodology and Limitations Disclaimer

Testing for genetic variation/mutation on listed genes was performed using the Illumina Global Screening Array (DNA genotyping microarray). All genetic testing is performed by ExtendingME Inc, 750 William D Fitch Pkwy Ste 420, College Station, TX 77845. 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. Patients should receive appropriate genetic counseling to explain the implications of these test results. The calculations and supplement recommendations presented in this report are not suitable for children under the age of 16. The analytical and performance characteristics of this laboratory developed test were determined by ExtendingME laboratory (Laboratory Director: James Jacobson, PhD) pursuant to Clinical Laboratory Improvement Amendments (CLIA) requirements (CLIA #: 10D2316806).

Medical Disclaimer

This test was developed, and its performance characteristics were determined by ExtendingME Inc. 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 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. This test is NOT for diagnostic purposes. It may identify general health risks that are associated with genetic variations but does NOT indicate a propensity for or susceptibility to any illness, disease, impairment, or other disorders, whether physical or mental.

Legal and Clinical Disclaimer

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Citations

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