

Epigenetic test

Discover your biological age and take control of your health with our epigenetic assessment

Unlocking the Power of Epigenetics

Epi in Greek means "above / on top of."

Genetics is the study of our genes and heredity. Epigenetics is an exciting new scientific field that studies how our genes function and how they respond to our environment. By measuring the impact of four important pillars of lifestyle on your DNA - tobacco, alcohol, diet (fruit and vegetables), and physical exercise - our innovative test can give you a broader picture of your current health and help you understand whether you are biologically younger or older than your chronological age.

Insights to Improve Your Health

With the results delivered in a detailed report, our epigenetic assessment provides you with the insights you need to make specific interventions to correct and improve certain lifestyle factors that contribute to your personal health in the long run. By working with your health practitioner, you can pinpoint the specific factors that have an impact on your health and take steps to improve them.



Take Control of Your Biological Age

Your biological age is not a fate, and a high biological age can be reversed with appropriate lifestyle changes. By taking action to increase your health span, you can ultimately improve your longevity. Repeat the test after some time to check the effectiveness of these changes and see the positive impact on your health. Empower yourself by uncovering your biological age and taking control of your health with our cutting-edge epigenetic assessment!

Embark on an exceptional epigenetic journey of self-discovery

Patient Journey

Our epigenetic assessment offers an exclusive patient journey, starting with an appointment with your health practitioner for an initial assessment and a blood sampling. The sample is then shipped to our state-of-the-art laboratory in Switzerland. Our team analyzes and interprets your results, which are then delivered to you in a report. With the help of your health practitioner, you will implement a personalized program based on your epigenetic results to achieve optimal health and wellness. You can repeat the test after 6 to 12 months to confirm the beneficial effects of your lifestyle changes. Let us help you take control of your health and well-being today!



About Health Center Clinique Lémana

A private international Swiss clinic, globally renowned since 1952 for its Revitalization & Anti-Aging programs, including a wide range of treatments to improve stress resistance, prevent burnout, strengthen the immune system, and slow down the effects of aging. Clinique Lémana is located in the heart of the Vaud Riviera, in an idyllic and peaceful setting.

Disclaimer de Genknowme

Genknowme epigenetic testing is meant to quantitatively measure and track the impact of lifestyle and environmental factors on DNA methylation. DNA is extracted from a blood sample to perform genetic and epigenetic analysis. Algorithms designed by Genknowme are used to interpret epigenetic analysis in combination with disclosed lifestyle information. Genknowme processes the blood sample and lifestyle information exclusively under explicit consent which is provided to our partner when the test was ordered. The patient holds complete ownership of their DNA and test results. The provided results and recommendations are for educational and informational purposes only. Genknowme epigenetic tests are not intended to diagnose, prevent, or treat any condition or disease. Provided information shall not be interpreted as medical or clinical advice. Patients requiring diagnosis and/or treatment are urged to contact their health care provider. Genknowme assumes no responsibility for test outcomes that could cause social, legal, or economic implications. Any questions on the results of the test, the processing of the data, or any other questions related to the test, will be strictly handled between Genknowme and its partners; Genknowme does not have any contact with patients. Genknowme holds all data in a way that does not identify the data owner.

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Stress Overload Epigenetic Signature

This document offers a concise scientific overview of Genknowme's epigenetic signature for allostatic load, representing the molecular impact of chronic stress exposure.

Stress and Stress Overload

Stress is a normal reaction triggered when an organism faces a challenging situation. It is useful by making people more alert and ready to tackle a physical event or an emotional upset. It is like an alarm system being activated when a threat is detected and an immediate response is required.

Stress overload, scientifically referred to as 'allostatic load', represents the detrimental effects accumulated in the organism when this alarm system is activated too frequently or for extended periods.

Definition

Allostatic load (aka stress overload) is a measure of the "wear-and-tear" on the body – or the physiological dysregulation – that accumulates as we age, and which is influenced by our individual experiences, behaviors, and environment. The central idea behind this model is that as we age, repeated or chronic stress, that may be beneficial in the short-term, can damage our ability to maintain homeostasis, which in turn causes allostatic (over)load and subsequent disease.

Contributors to Stress Overload

While stress is the initial reaction to a stimulus, allostatic load reflects the lasting impact of enduring high levels of stress. All sorts of stress, not just mental or emotional struggle, can lead to a "wear and tear" on the body. This also includes the body's reaction from four main systems: neuroendocrine, metabolic, immune, and cardiovascular. Each of these can be impacted by different types of stress and add to the overall strain on the body.

Consequences of Stress Overload

This accumulation of stress responses, called allostatic load in the medical literature and that we call stress overload, can contribute to several long-lasting health issues including cardiovascular disease, cognition, premature ageing, and overall risk of mortality. This happens because the body's stress systems get worn down when they're constantly active.

For instance, if the body's metabolic system is always stressed, it can lead to problems like diabetes or weight gain. If the immune system is under constant stress, it might struggle to fight off illnesses. And if the cardiovascular system is always working harder due to stress, it can result in high blood pressure and heart disease.

Measure of Stress Overload

Stress overload is typically estimated with a multitude of biomarkers that measure the functioning of the immune, cardiovascular, metabolic, and neuroendocrine systems. However, among clinicians, there is little agreement as to what biomarkers should be included in this phenotypic measure of allostatic load, as well as how risk should be calculated.

Genknowme's epigenetic signature of stress overload was developed to standardize measurement of allostatic load and to provide a personalized, more precise measure that circumvents the requirement of numerous clinical tests.

Initial results demonstrate a strong correlation between the epigenetic signature and a clinical phenotype of allostatic load.



Figure 1 – Correlation between phenotypic allostatic load (estimated with blood and physiological markers) and genknowme's epigenetic signature (estimated from methylation data)

Our stress overload signature was based on the following biomarkers:

- Immune: IL-6, IL-10, IL-1b, IFNg, CRP, and TNF-α
- **Cardiovascular**: systolic and diastolic blood pressure, and heart rate
- **Metabolic**: cholesterol, HDL, LDL, GGT, ALAT, insulin, albumin, blood lipids, glucose, uric acid, alanine transaminase, and BMI
- Neuroendocrine: DHEA, cortisol, and androsterone, self-assessed stress

For each of these systems, epigenetic signatures were also created and represent the individual impact of each system on the stress overload. This allows the personalization of recommendations and treatments.

Stress Overload and Chronic Diseases

Stress overload, as the cumulative damage due to stress, can progressively drive the body's internal systems to their limits and precipitate various health issues.

Mental health problems such as depression may arise from sustained hormone imbalance. Persistent stress on the body's energy system can foster weight gain and even diabetes. A constantly active disease-fighting system might lead to higher susceptibility to illnesses. Furthermore, an overworked cardiovascular system might result in heart disease. Essentially, stress overload, or allostatic load, is a signal from the body, indicating it's been grappling with excessive stress over a significant period.



Figure 2 – Risk of cardiovascular disease (odds ratio) associated with the two measures of allostatic load

Interestingly, the epigenetic signature of stress overload is more strongly associated with chronic disease, e.g., cardiovascular disease, in comparison to the clinical phenotypic measure of allostatic load.