

# ***CHRONOMICS***

A revolutionary solution for insurers and their customers

# Trends facing life insurance

**The 'silver tsunami':** The % of people aged 65 and over will double between 2010 - 2030.

**Lifestyle choices out of control:** Obesity is an 'epidemic' and smoking and alcohol abuse are still on the rise.

**Chronic diseases on 'Most Wanted' list:** Diabetes, CVD, cancers, and many others take up 75% of healthcare resources.

**The actuarial arms race:** Accurate mortality assessment is a never ending battle, and the world is changing faster than ever.

**Consumers one step ahead:** Around  $\frac{1}{3}$  of americans use wearable health tech and over 30 million have taken DTC genetic tests.

**Regulation favours the customer:** Consumers are rightly protected, but at what cost? Genetic testing encourages anti-selection.



# The challenge for life insurance



## Maximise intake of clients:

- Attract customers with competitive pricing and added value benefits.
- Building customer relationships and loyalty.
- Unlocking new populations of insurable customers.

## Maximise underwriting efficiency and accuracy:

- Accelerated underwriting to minimize friction and resource use.
- Fully informed policy pricing with accurate and up to date information.
- Optimized health screening and risk stratification.

## Minimise claims impact:

- Active management to maximise wellbeing and healthspan.
- Dynamic pricing to reward healthy behaviour.
- “We make more money by helping you live longer” - Top 10 EU insurance CCO

# Chronomics and the epigenetic revolution

## Company overview

- Founded 2017 by world leading researchers in epigenetics and AI.
- Launched world's first saliva based repeatable epigenetic test kit.
- Powering proactive and preventive healthcare around the world.
- World class international scientific advisory board.

## Mission statement:

Improving human health by making the unseen actionable.



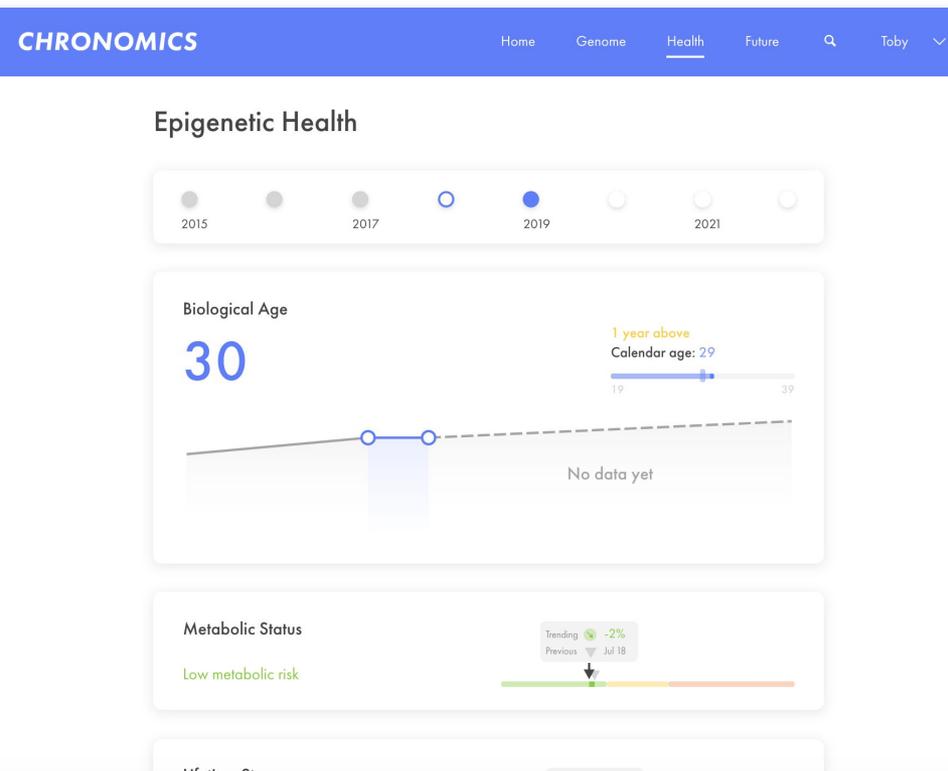
CEO and Founder - Dr. Tom Stubbs - [LinkedIn](#)



EMBL-EBI



# Complex science made simple to use



## Platform

- A simple, non-invasive saliva collection kit, at home, or in-clinic.
- Remote access for end users and partners through secure online portal.
- The first longitudinal and actionable health insights from DNA.
- Personalised recommendations to optimise long term health.

## Health insights

- Internal health states inc. metabolic state and risks of chronic diseases.
- The most accurate and up to date quantification of biological aging rates.
- Cumulative impact of external lifestyle and environmental risk factors.



# The science behind Chronomics

## Science

Epigenetics is the science of how our DNA interacts with our environment and how genes are controlled.

Crucially, epigenetic signals change over time - unlike genetic traits, they are not fixed from birth.

DNA methylation is the ultimate epigenetic biomarker, a link between nature and nurture.

## Technology

We combine the latest in next generation sequencing technology and epigenetics science with cutting edge machine learning and AI.

From a simple, non-invasive saliva sample we analyse over 20,000,000 DNA methylation positions with near 100% accuracy.

Our pioneering biomarker discovery engine builds dynamic and accurate indicators for health and lifestyle risks.



# Epigenetic indicators: next gen biomarkers



## Key epigenetic indicators from saliva:

**Biological age:** The most accurate test for age acceleration and all cause mortality due to health and lifestyle risk.

**Metabolic status:** Capturing complex metabolic changes from inactivity and poor diet, and the risk of obesity and diabetes.

**Alcohol exposure:** Quantifying cumulative alcohol impact and risk of associated diseases.

**Smoking exposure:** Measuring the lifetime impact from harmful chemicals in cigarette smoke.

**Other indicators:** Diverse range of health and lifestyle risk factors, including custom or bespoke development of novel areas of interest.

More information available on request.

# Epigenetic testing in life insurance

## Customer health benefits:

- Attractive perks for prospective customers.
- Customer health and wellbeing support and guidance.
- Holistic health and quantifiable prevention.

## Managing risk and client health:

- Enforced management of the business and better screening.
- Benchmarking and tracking the impact of behaviour change.
- Rewarding healthy behaviour in at-risk population.

## Unlocking new business in at-risk populations:

- “Insuring the uninsurables” - chronic illness sufferers.
- More informed impaired insurance policies.
- Better risk stratification for prognosis and comorbidities.

## Accelerated underwriting:

- Unprecedented precision health data for actuarial modeling.
- Frequently updated prognoses and risks for dynamic pricing.
- Anti-selection protection with more informed data.



# A giant leap or small step to a revolution?



## Epigenetics vs genetic testing:

Lifetime risk factors are the lion's share of risk. Epigenetic testing encapsulates cumulative risk over and above the genetic background.

In most countries, the use of fixed genetics is only permitted in rare cases like Huntington's and for the highest value policies.

Dynamic epigenetics complements or replaces smoking (urine cotinine), alcohol (blood CDT), diabetes (blood Hb1Ac) or other tests.

## Current attitudes to DNA testing:

80% of people surveyed would be willing to impart genetic data to their insurer to receive health and policy benefits.

Privacy and data security are paramount, however consumers still see the benefits in health testing.

Precision health, ubiquitous wearables, and DTC testing, means consumers are ready for health data driven products.

# Why work with Chronomics?

## Scientific integrity:

Chronomics is firmly rooted in science with a world class advisory board.

## Simplified health testing platform:

Non-invasive, remote, all-in-one testing for multiple risk factors.

## Bespoke service design:

We co-create the right solutions for our partners, eg. novel indicators.

## Backed by insurance:

Significant funding from both biotech and insurtech venture capital.

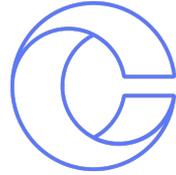
## Recognition from investors, healthcare, and insurance:



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# ***CHRONOMICS***

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