Tim Heinemann
tim.heinemann@csem.ch

BIOHACKING: UNTER MITHILFE VON KI DAS OPTIMUM AUS KÖRPER UND GEIST HOLEN

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FUTURE STORIES 2025

IMPORTANT DISCLAIMER

- The information presented in this presentation on longevity, biohacking, disease risk assessment and prevention, aging treatments, and related topics is intended solely for educational and research purposes. It is important to note that this content does **not** constitute medical advice, diagnosis, or treatment recommendations. The insights provided reflect ongoing research and theoretical concepts in the fields of aging, health optimization, and biohacking, but they should **not** be interpreted as personalized guidance or professional healthcare consultation.
- Furthermore, many of the methods, treatments, supplements, or products discussed in this presentation have **not** been approved by regulatory authorities, including those in Switzerland, and their safety, efficacy, and long-term effects may still be under investigation. As the scientific understanding of these areas continues to evolve, any references to products, treatments, or interventions should be considered within the context of ongoing research and regulatory reviews.
- Before making any health-related decisions or implementing any new practices, it is strongly recommended to consult with qualified medical professionals and to rely on their expertise for guidance tailored to your specific health conditions and needs.

CSEM AT A GLANCE

We are a public-private, non-profit Swiss **technology innovation center**

We enable competitiveness by **developing and transferring world-class technologies to the industrial sector**

1984
FOUNDED

630
SPECIALISTS

115
M TURNOVER in 2024

177
PATENT FAMILIES

> 50
VENTURES since 1984

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We are a public-private, non-profit Swiss **technology innovation center**, a transmission belt between academia and industry

Fundamental Research

Applied Research

Tech Transfer

Product development

Industrialization

Production

Sales & services

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INNOVATIONS' VALLEY OF DEATH

92% satisfied customers

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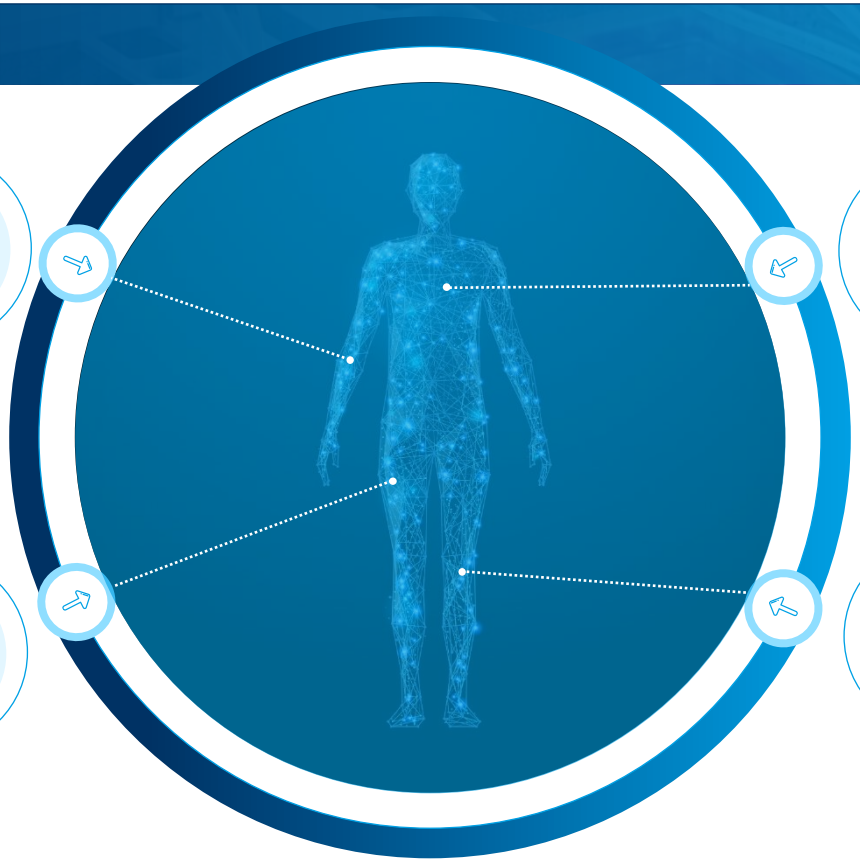
Uniting Biology with Technology for Personalized Health

We innovate at the convergence of technology and life
to help bring the right treatment to each patient.



BIOSENSING

LAB AUTOMATION

CELL TECHNOLOGIES

AI FOR LIFE SCIENCES

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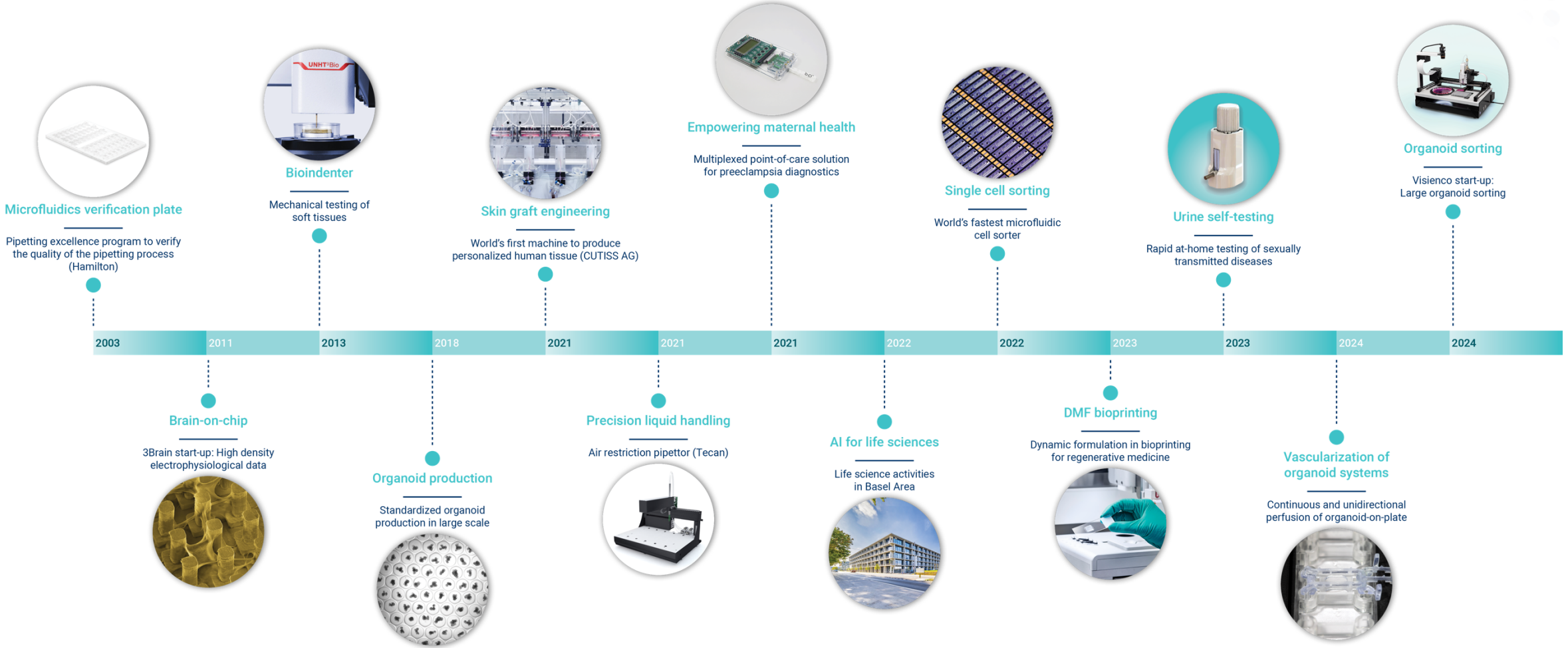
SELECTED MILESTONES



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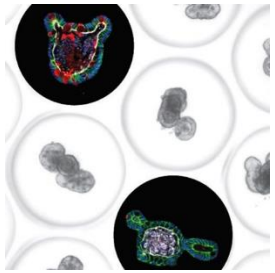
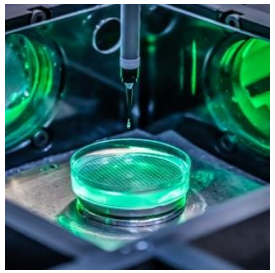
SOCIETAL AND ECONOMIC IMPACT

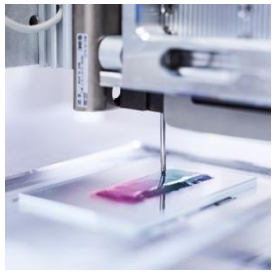
SUNBIOSCIENCE



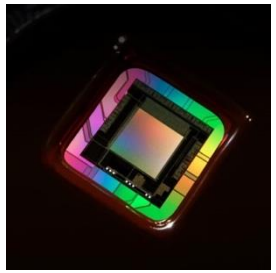
HAMILTON



REGENHU



3·Brain high resolution technology



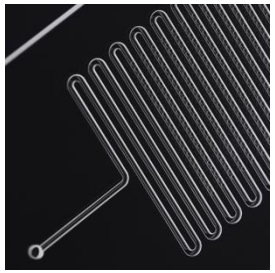
TECAN.

TECAN.

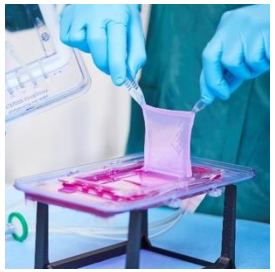
SURFIX diagnostics

HAMILTON

IMT



CUTISS personalized skin



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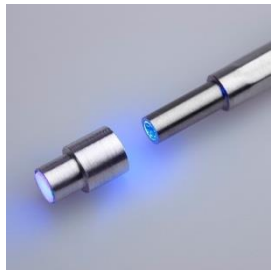


MCMM DIAGNOSTICS

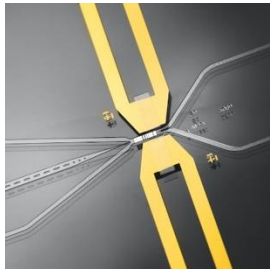
CLEXBIO

FLUIGENT SMART MICROFLUIDICS

cellularhighways A TTP Company

ALITHEA GENOMICS

HiFiBiO THERAPEUTICS

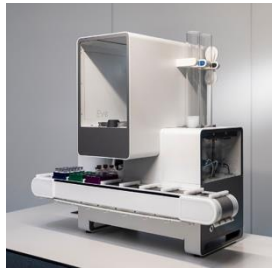


securecell

STAT PEEL MATERIAL-SELECTIVE DETECTION SYSTEM

maxon

BIONTER



INVENesis

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AI FOR LIFE SCIENCES'S MISSION

Tailor predictive AI solutions by integrating and contextualizing multi-modal data to accelerate innovation in:


Diagnostics


Personalization


Prevention


Longevity


Drug development

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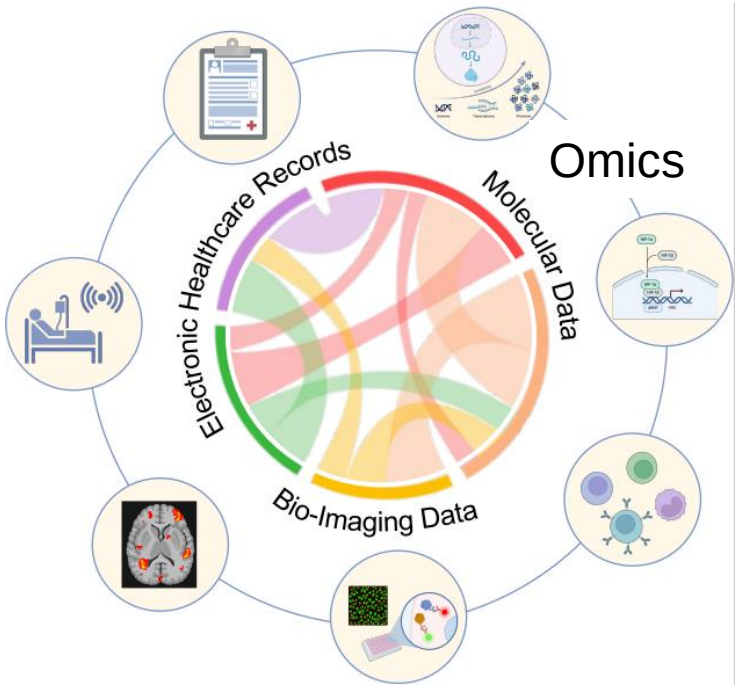
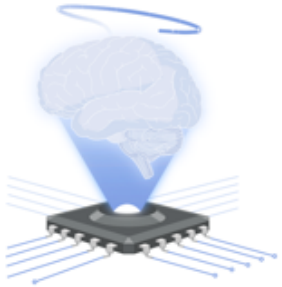
CUSTOMIZED AI SOLUTIONS

MULTI-MODAL DATA INTEGRATION

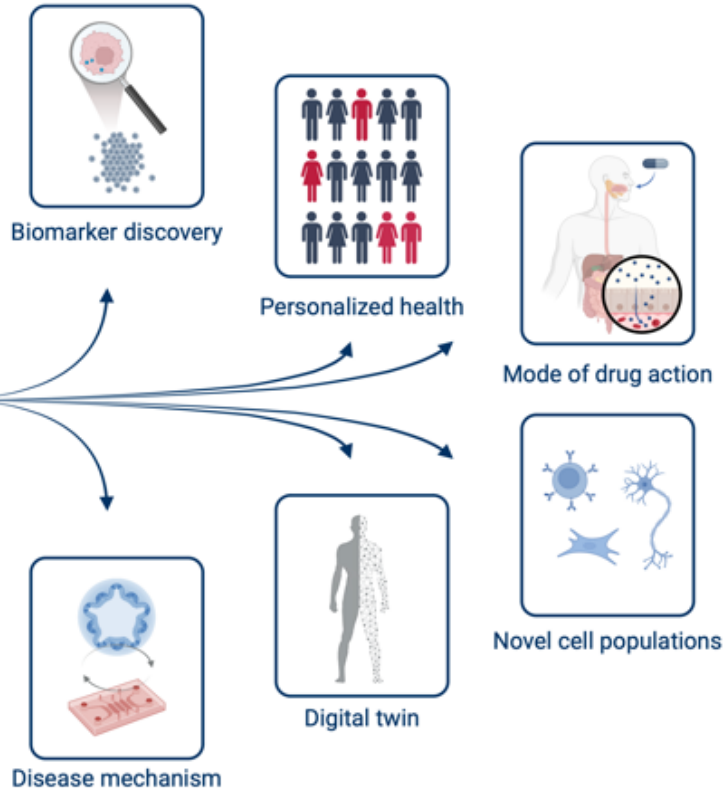


AI ENGINE

- Machine learning
- Explainable AI



PREDICTIVE ANALYSIS



- Drug response
- Disease risk
- Disease severity
- Biological age
- Diagnosis
- …

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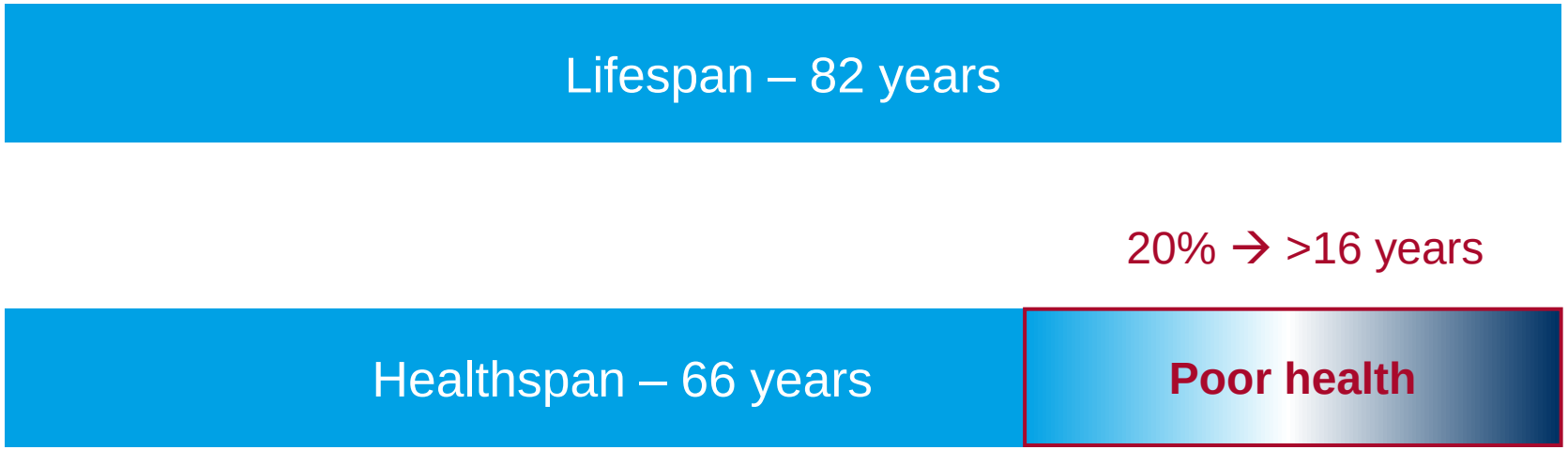
Background

Personalized health through iterative data-driven lifestyle interventions

LIFESPAN IS NOT EQUIVALENT TO HEALTHSPAN



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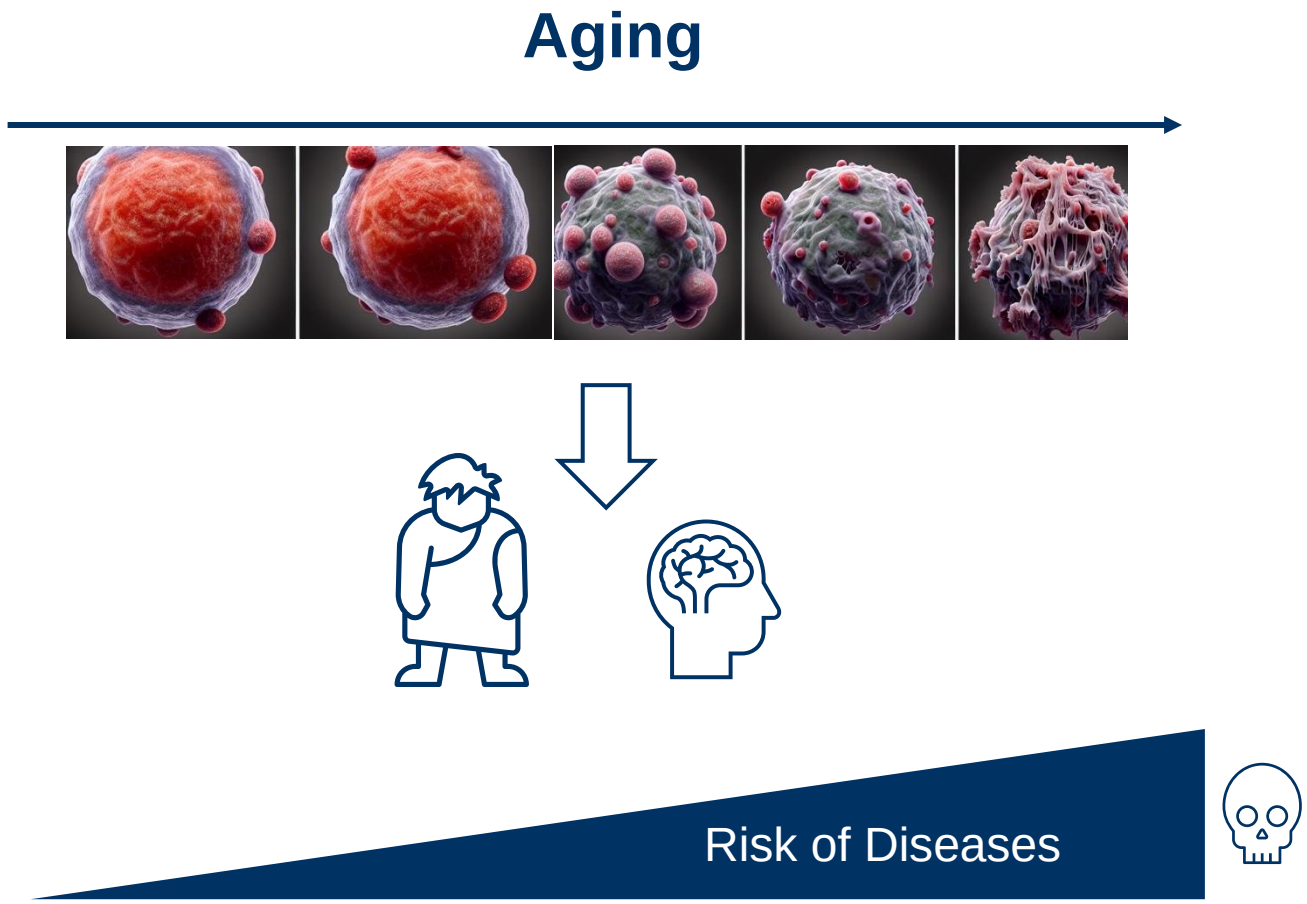
AGING – WORLD HEALTH ORGANIZATION

By 2050

1 out of 5 people

60+

> 2 billions



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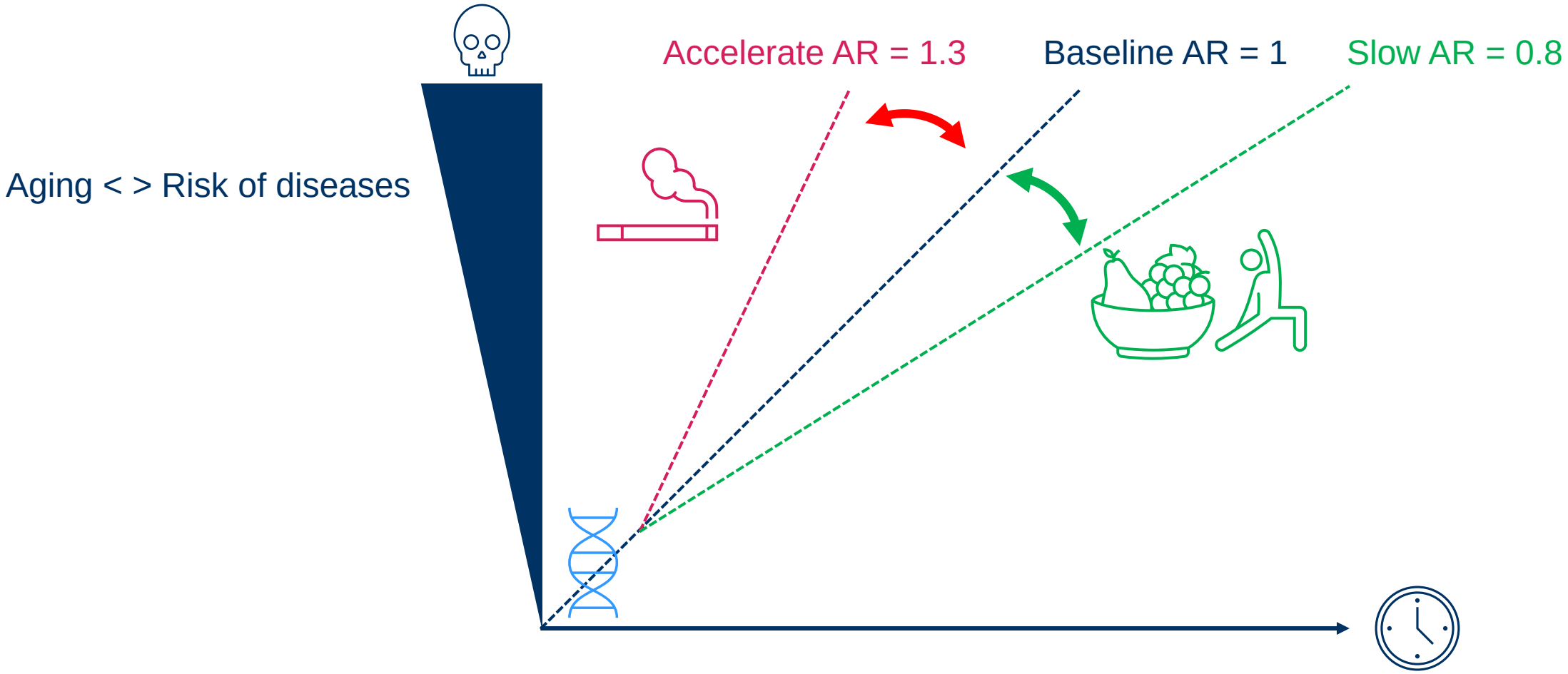
AGING & ENVIRONMENTAL FACTORS



Aging Rate (AR) *fictive numbers provided as examples for illustrating the concept*

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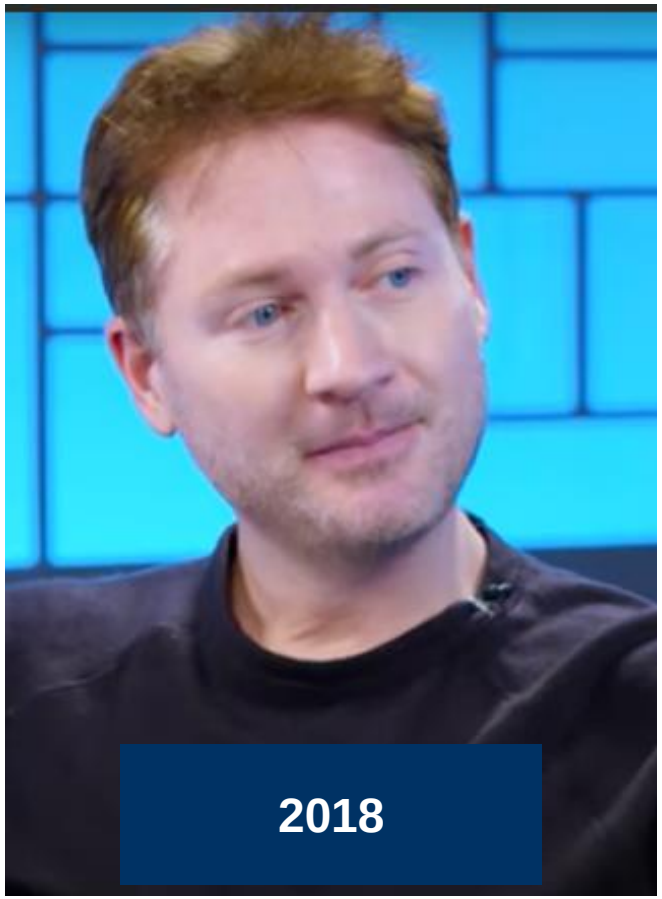
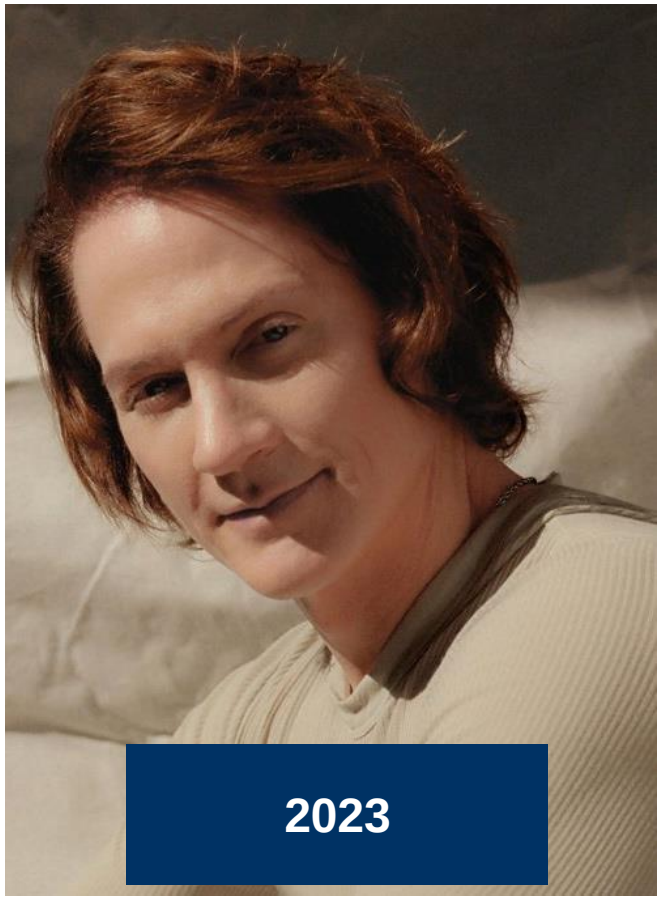
BRYAN JOHNSON - THE ULTIMATE BIOHACKER





Biohacking is a practice that involves making incremental changes to one's body, diet, and lifestyle to improve health, performance, or well-being.

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THE ‘BLUEPRINT PROTOCOL’

Hundreds of measurements

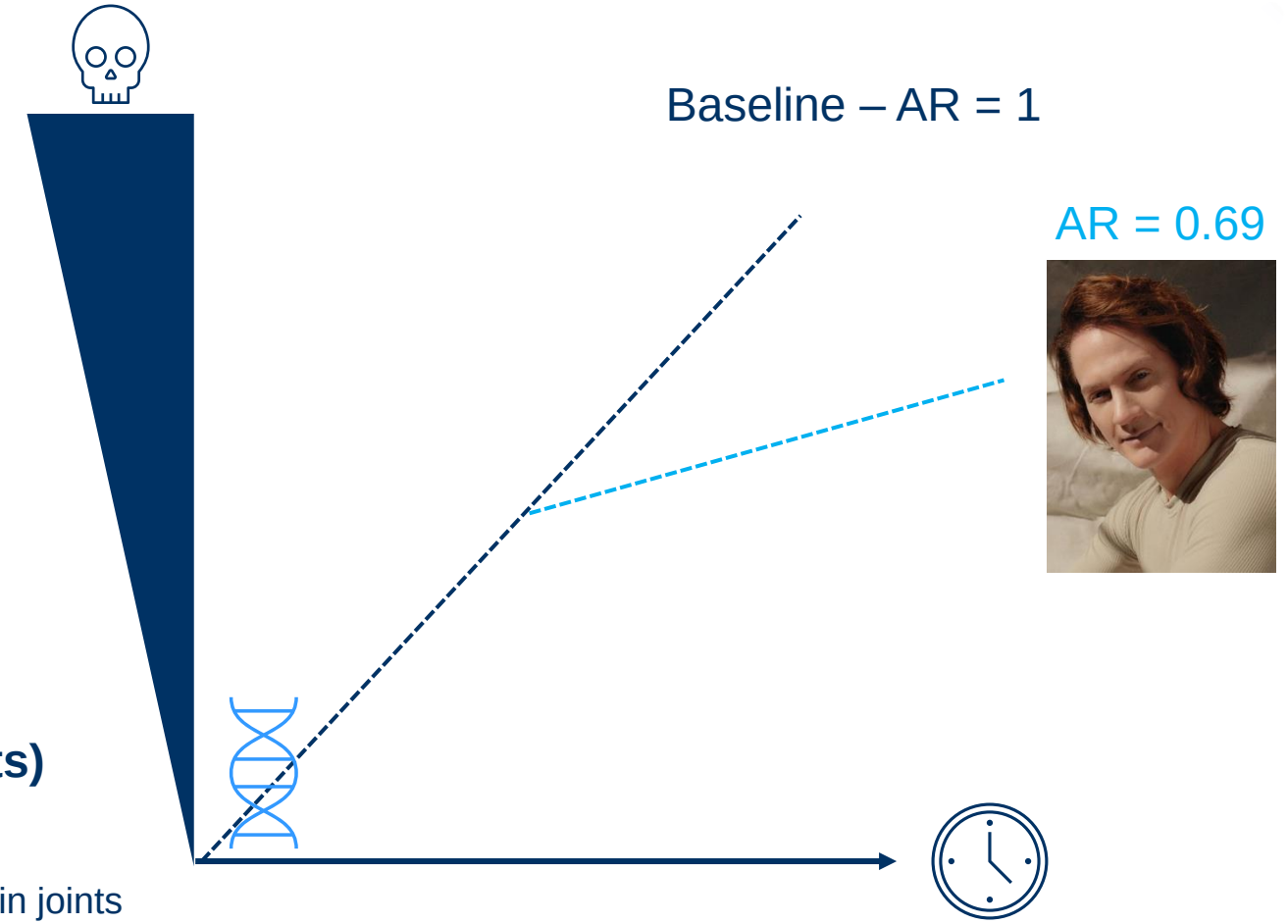
- Standard: biofluids and fitness scores
- Advanced: MRI and ultrasound
- Uncommon: lungs, nerves, hearing, and intestinal tract

Personalized lifestyle interventions

- Nutrition
- Physical activity
- Sleep

Personalized rejuvenation procedures (Tests)

- Gene therapy (follistatin)
- Bone marrow-derived mesenchymal stem cells injection in joints



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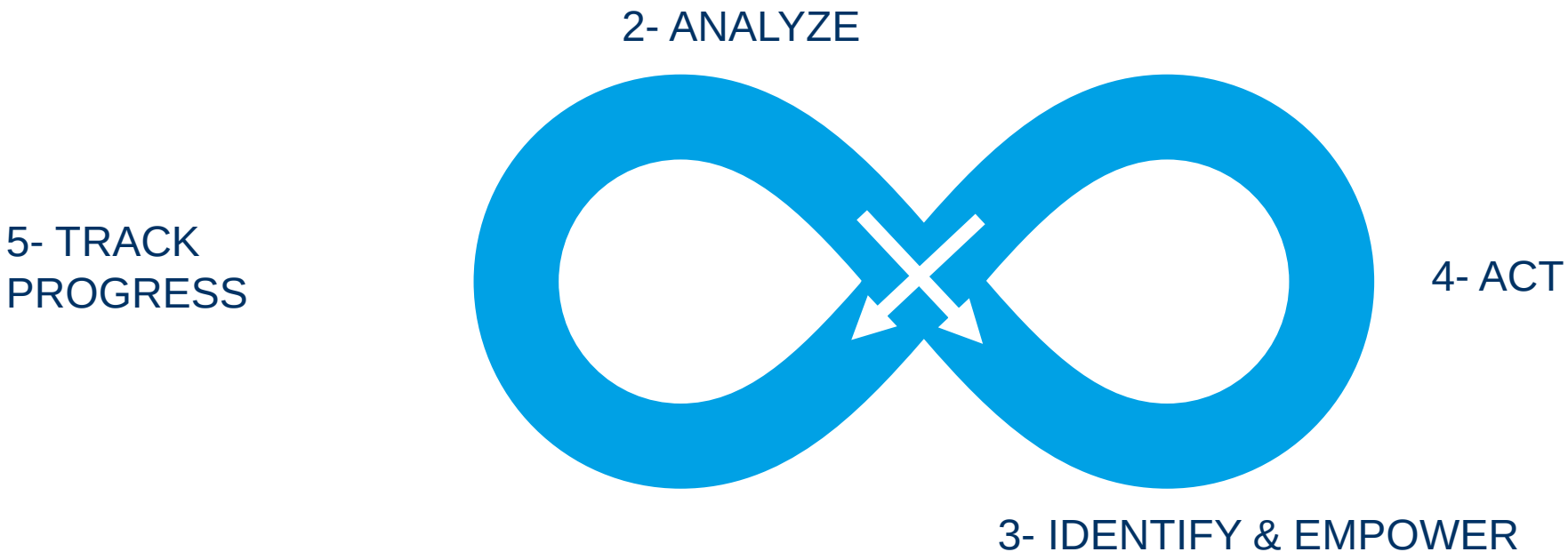
BIOFEEDBACK



An iterative data-driven and scientific approach for optimizing **personalized health**

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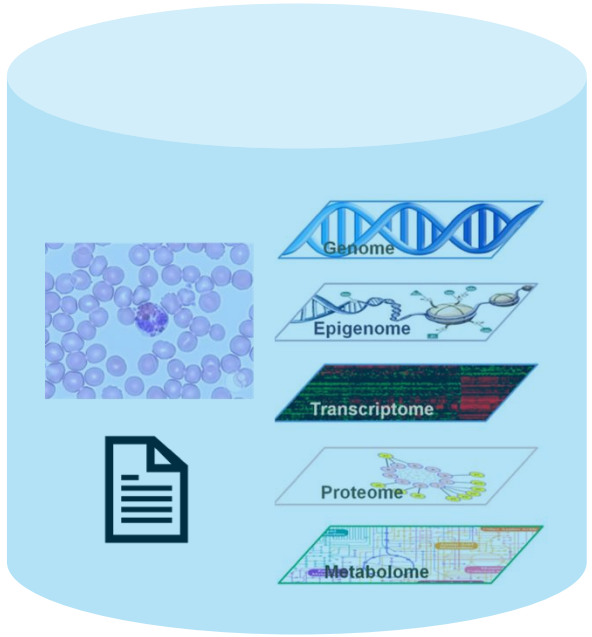
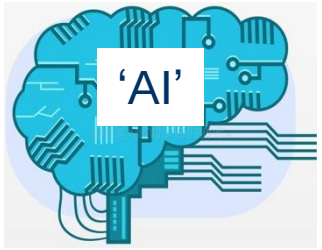
PREDICTIVE AI

DATA



ENGINE



PREDICTIVE TASKS

- Disease risk
- Biological age (immunity)

Offer opportunities of actionable insights for personalized health interventions

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ACCELERATE PROGRAM

Prevention is the future of healthcare

Andres Lanzos, Co-Founder & CSO
Dominic Mehr, Co-Founder & CCO
Kevin Yar, Co-Founder & CEO

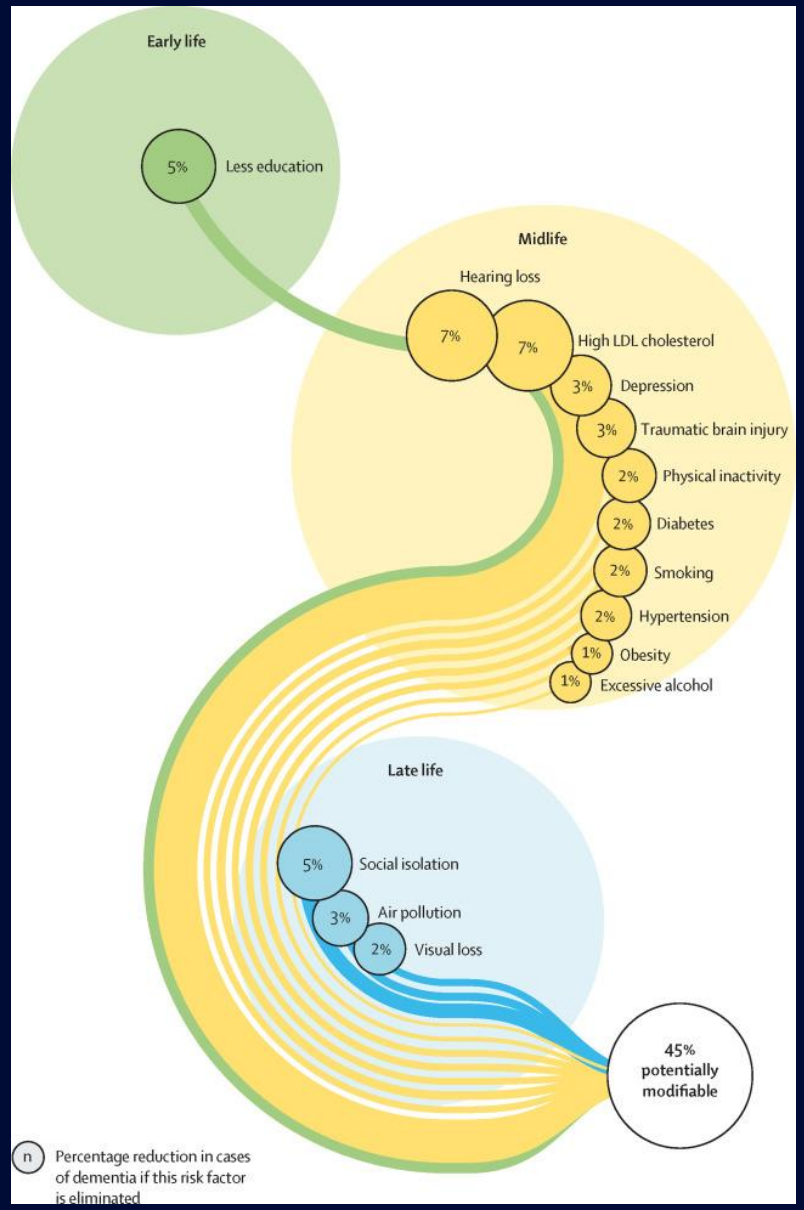
Problem

41 M yearly deaths by chronic diseases

80% are preventable

Source: WHO Action plan for the prevention and control of NCD in the WHO European Region

Potential modifiable risk factors for dementia

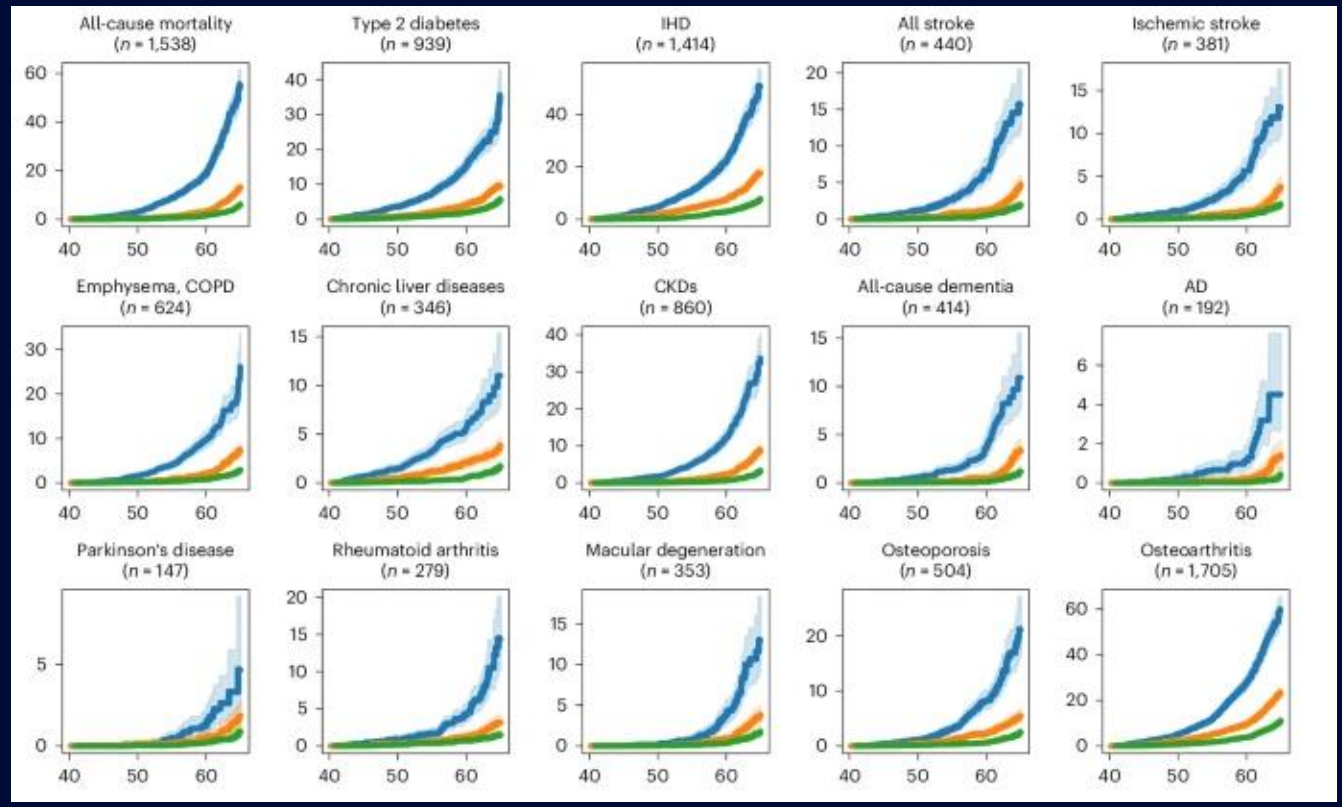


Nearly half of dementia cases could be prevented or delayed by tackling 14 risk factors starting in childhood

Livingston, Gill et al. *The Lancet*, (2024)

Proteomics-based prediction of age-related diseases

Plasma proteins serve as biomarkers of biological aging (r =0.94), enabling early risk prediction for age-related diseases, multimorbidity, and mortality.



Argentieri, M. A. et al. *Nature Medicine*, (2024)

Solution

TRUEYOU OMICS

Blood test via multi-omics & AI

Predisposition

DNA

Lifestyle

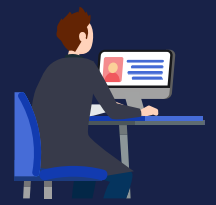
RNA

Proteins

Consumer journey

TRUEYOU OMICS

01



Consumer acquisition

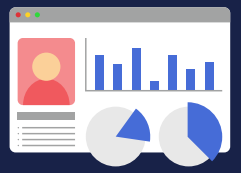
02

Sample collection

03

Multi-omic measurement

04



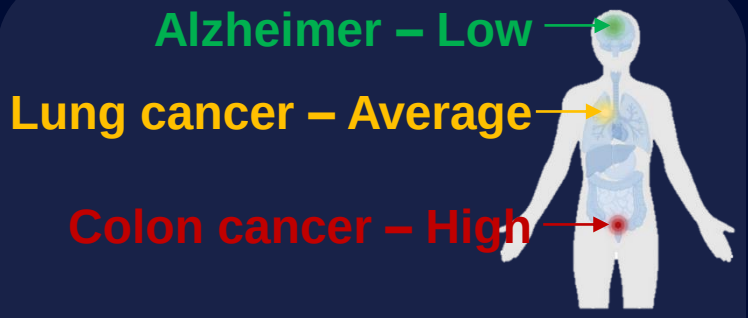
Analysis & interpretation

05

Disease risks & prevention plan

Value Proposition

Early risk detection



(examples)

Effective prevention plan

Increase fiber consumption

Colonoscopy

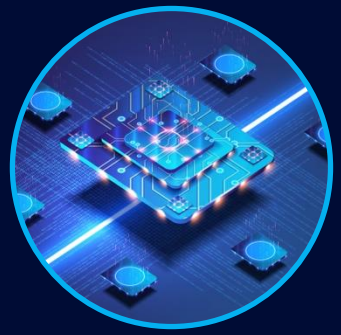
(examples)

Technology

World's largest training datasets

TYOENGINE

Novel AI models



Lung cancer

5-year risk prediction

Accuracy	80%
Sensitivity	75%
Specificity	80%

Heart Failure

Alzheimer

Diabetes

Lung diseases

Meet the Team

Kevin Yar

CEO & Co-Founder

Biochemist and
AI Engineer, MSc

Andres Lanzos

CSO & Co-Founder

BioMedical Data
Scientist, PhD

Dominic Mehr

CCO & Co-Founder

Serial Entrepreneur
& Venture Builder, BA

Guillaume Desachy

Advisor

Head of Biometrics at
Pierre Fabre

Lucas Wittwer

Computer Scientist, PhD

Jonas Meirer

Data Scientist, MSc

Carine Poussin

Group Leader, PhD & MBA

CSEM

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ACCELERATE PROGRAM

Let’s make prevention the future of healthcare

Andres Lanzos

Co-Founder & CSO

andres.lanzos@trueyouomics.com

www.trueyouomics.com

TRUEYOU OMICS

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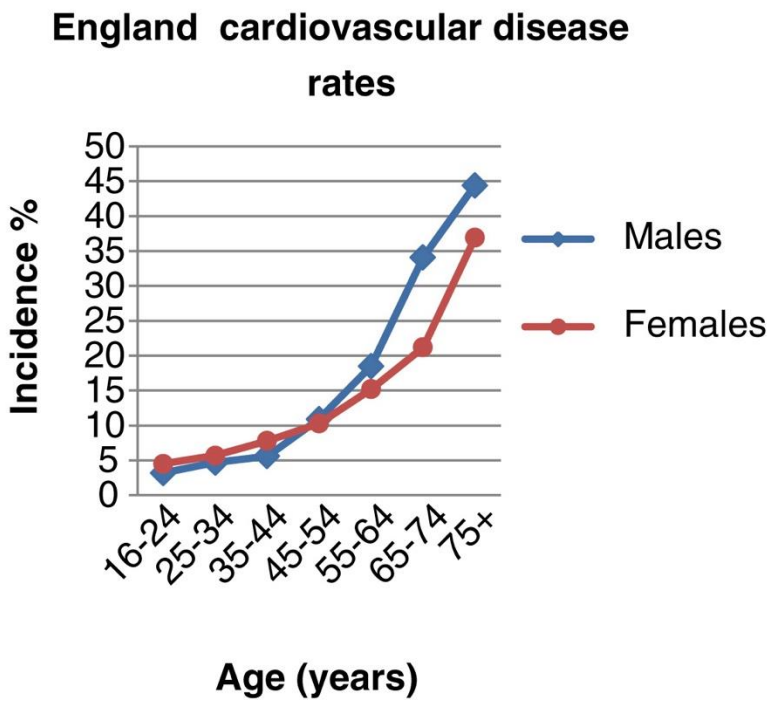
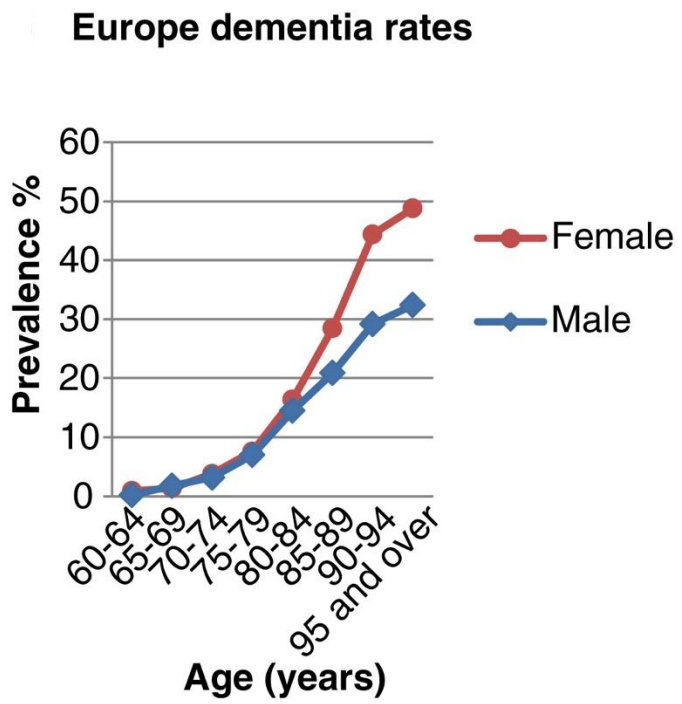
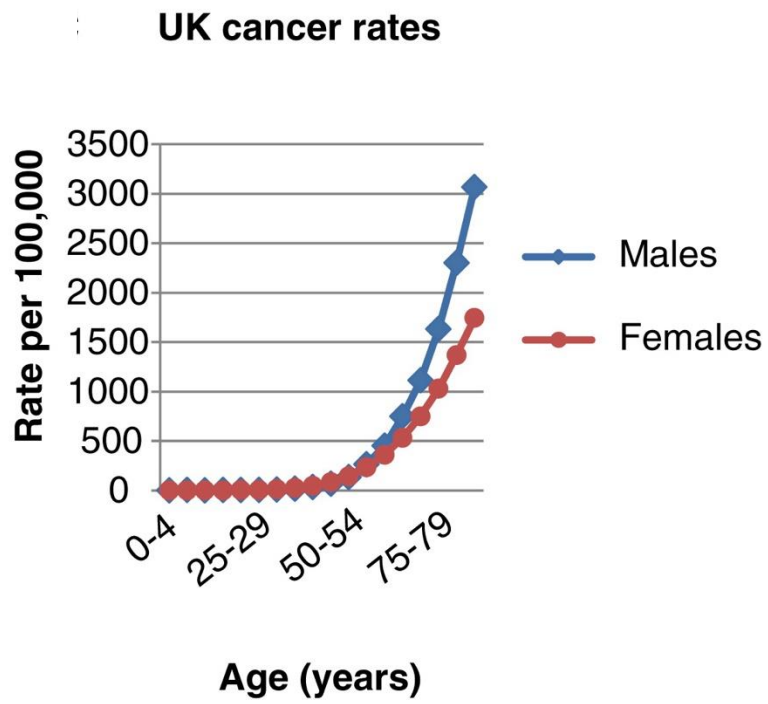
Personalized immune-rejuvenation

AGE IS A KEY RISK FACTOR FOR DISEASE AND DISABILITY







Niccoli, T. & Partridge, L. Curr Biol, 2012

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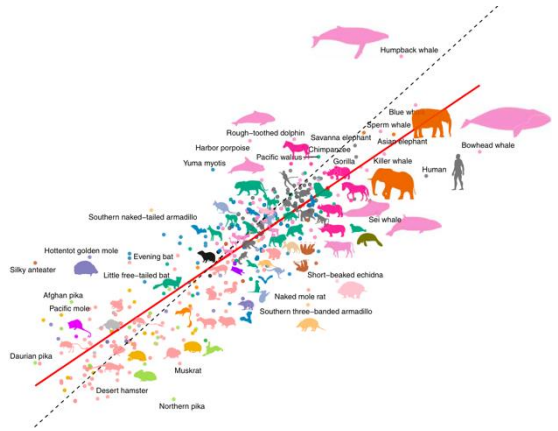
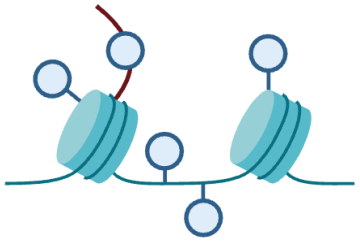
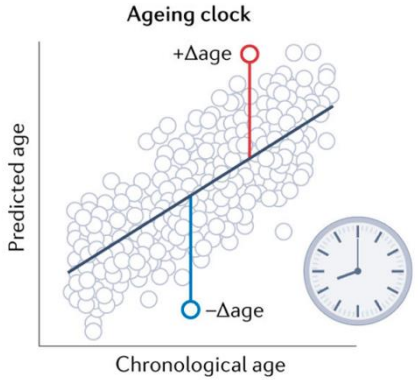
MOLECULAR AGING CLOCKS

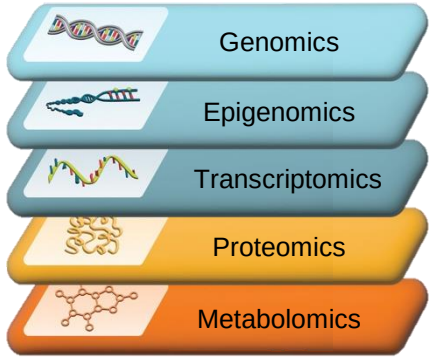
First generation



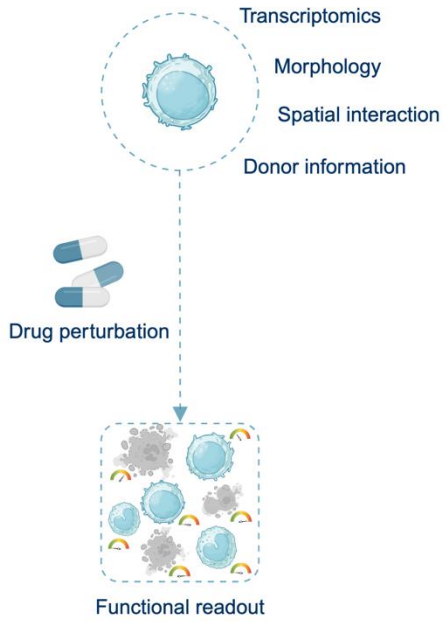


Second generation





Next generation



ETH zürich Innosuisse

Rutledge, J. et al., Nat Rev Genet, 2022
Li et al., Science Advances, 2024

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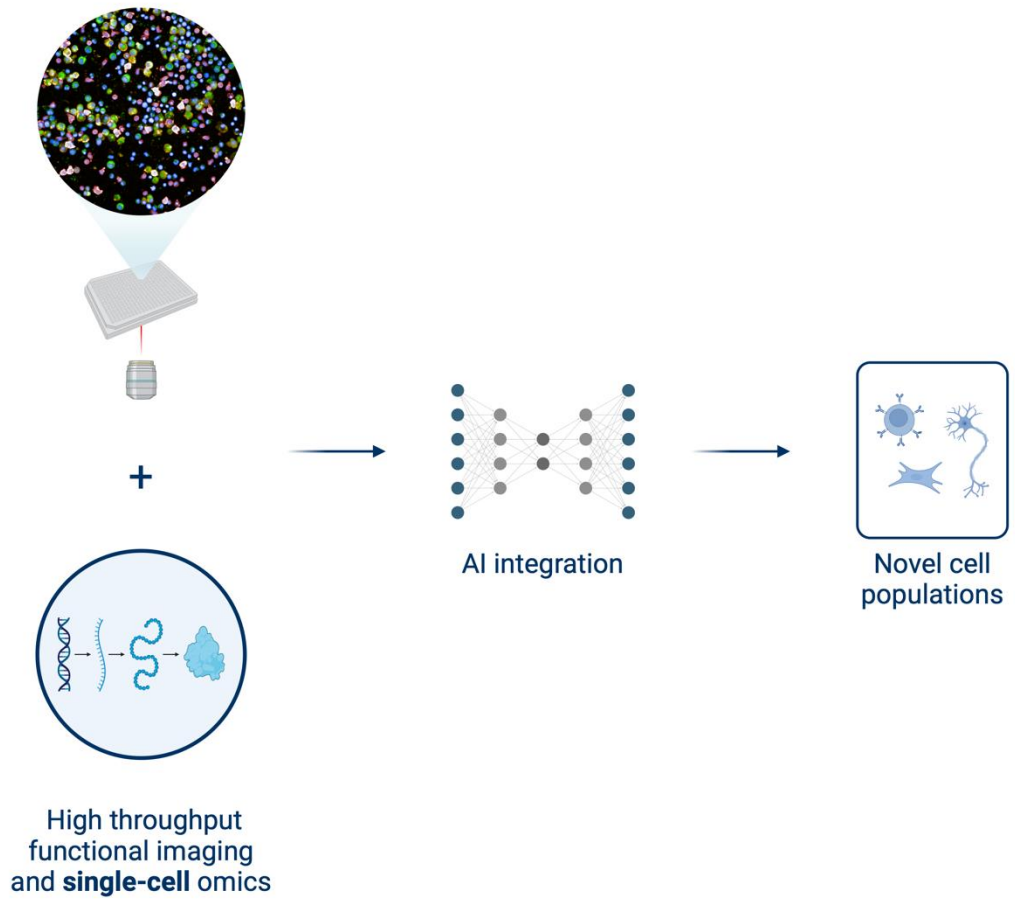
PHENOMICS AND ITS MARKET POTENTIAL



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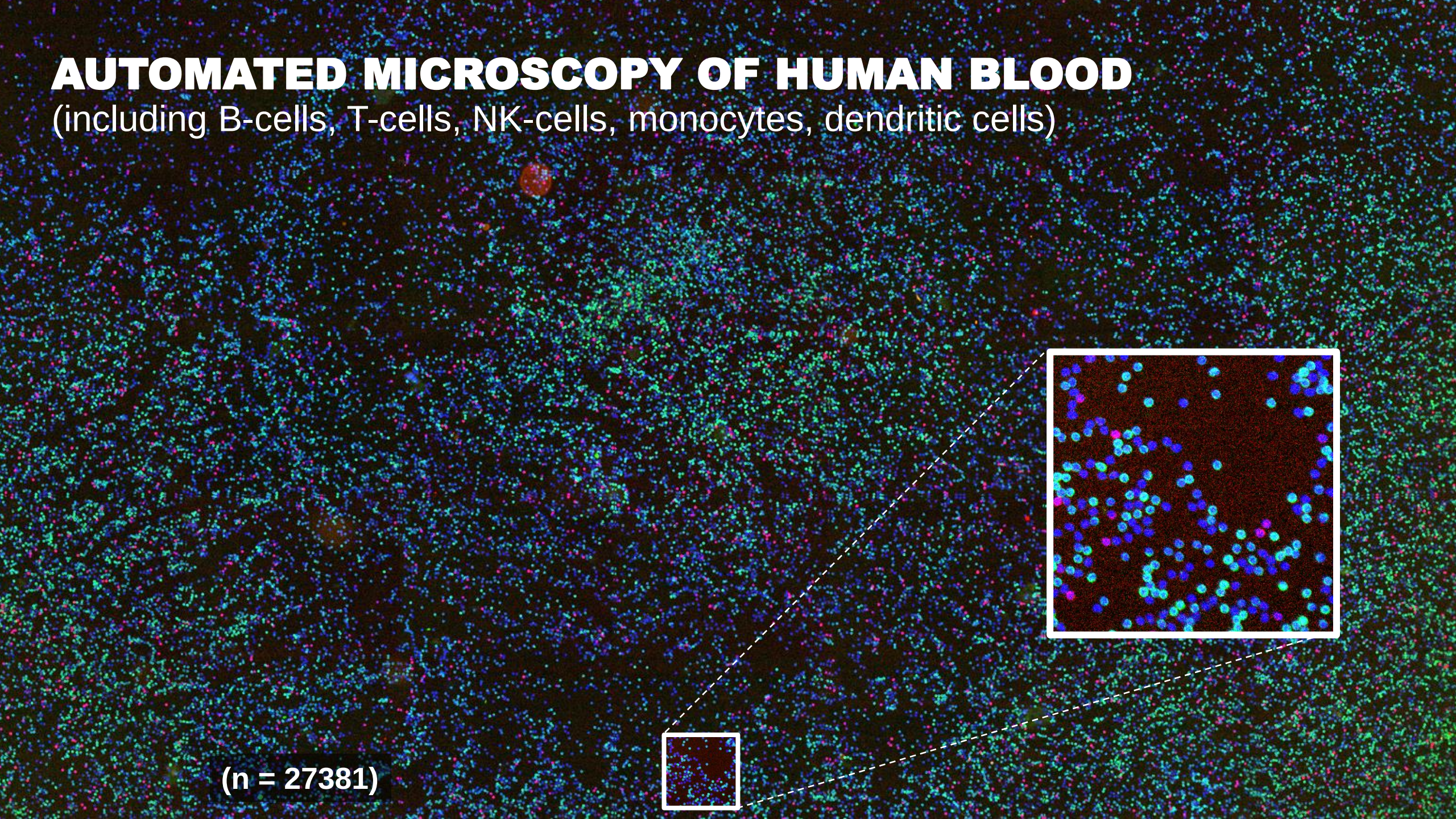
AUTOMATED MICROSCOPY OF HUMAN BLOOD

(including B-cells, T-cells, NK-cells, monocytes, dendritic cells)



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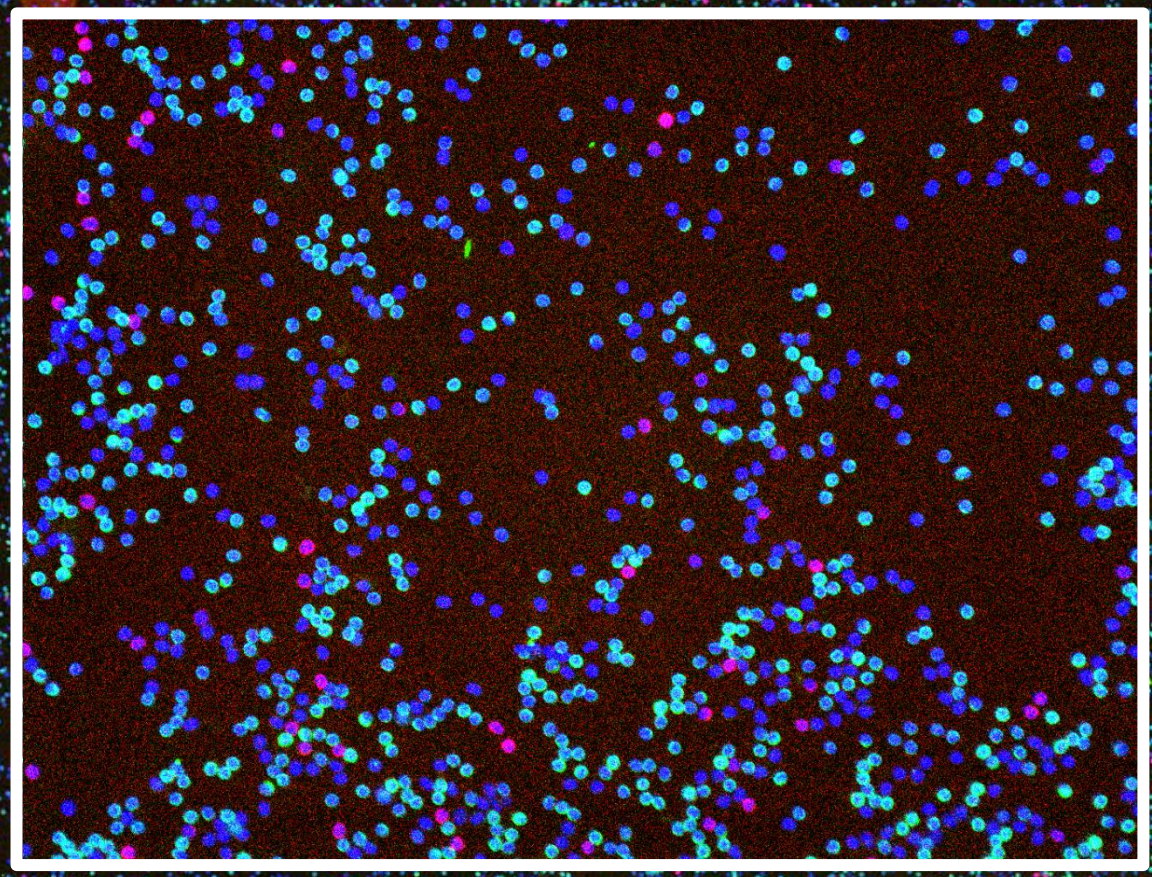

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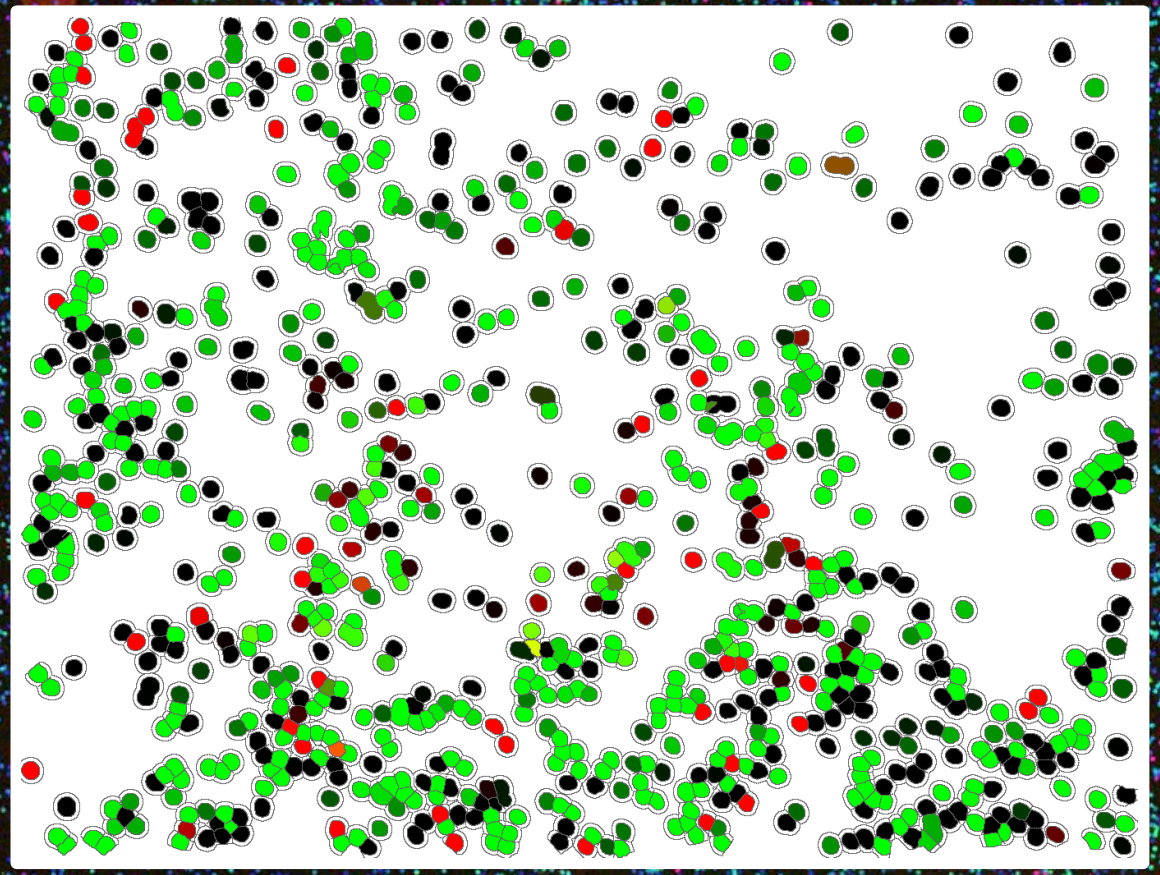
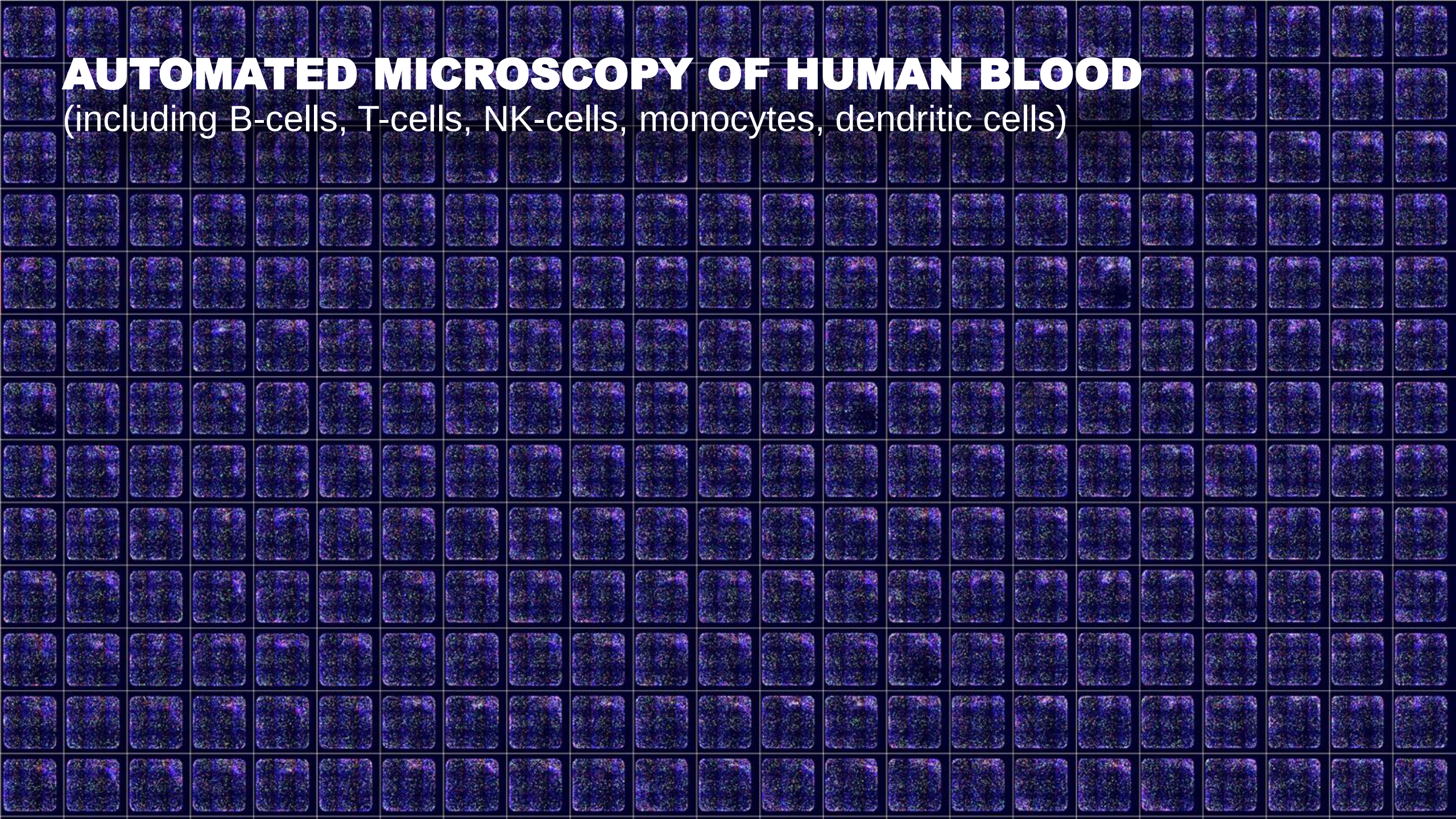
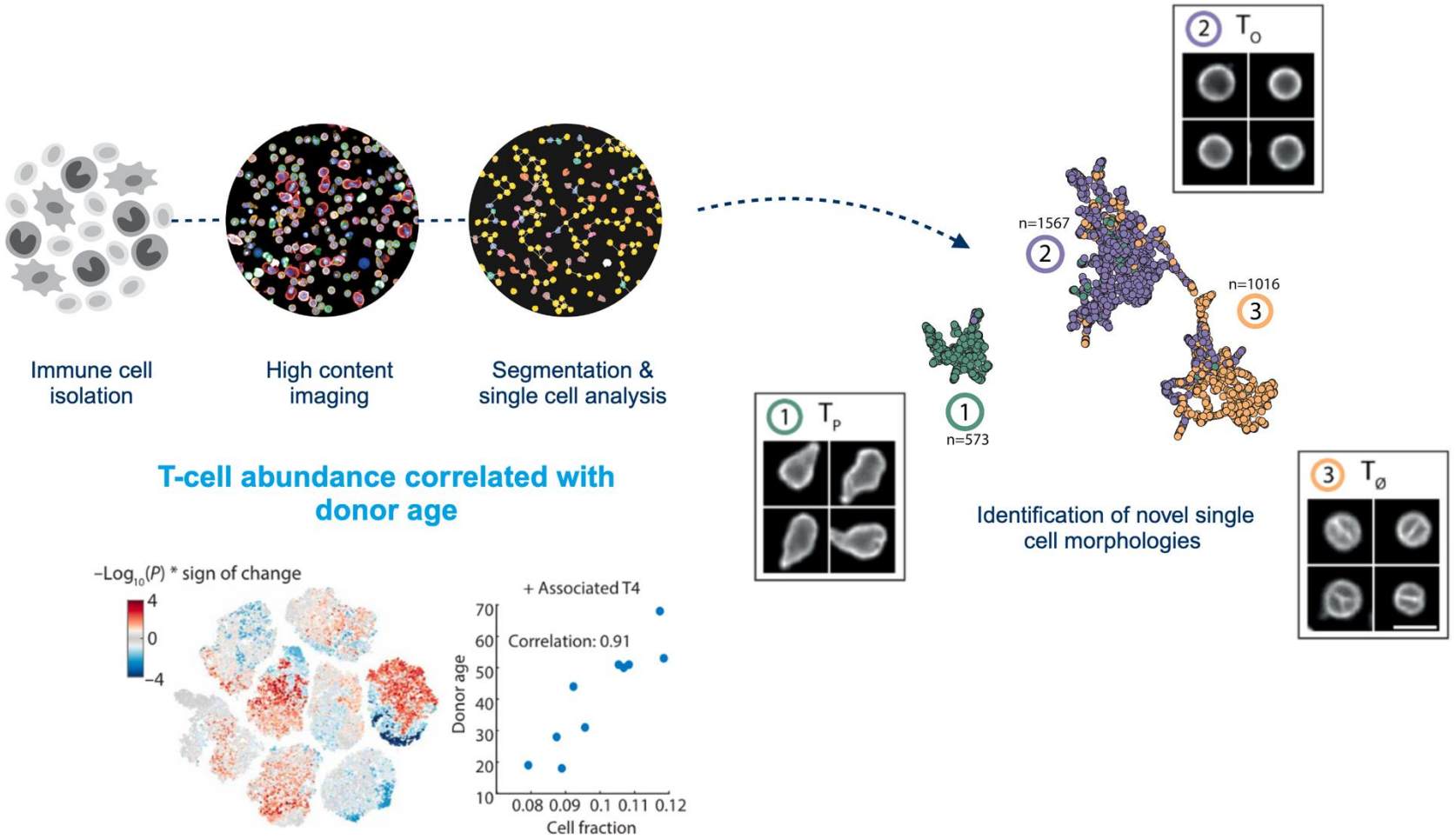


(n = 27381)


AUTOMATED MICROSCOPY OF HUMAN BLOOD
(including B-cells, T-cells, NK-cells, monocytes, dendritic cells)

MORPHOLOGY AS A BIOMARKER FOR CELL FUNCTION



Hale, B. D., et al. *Science* (2024)
Severin, Y., et al. Science Advances (2022)

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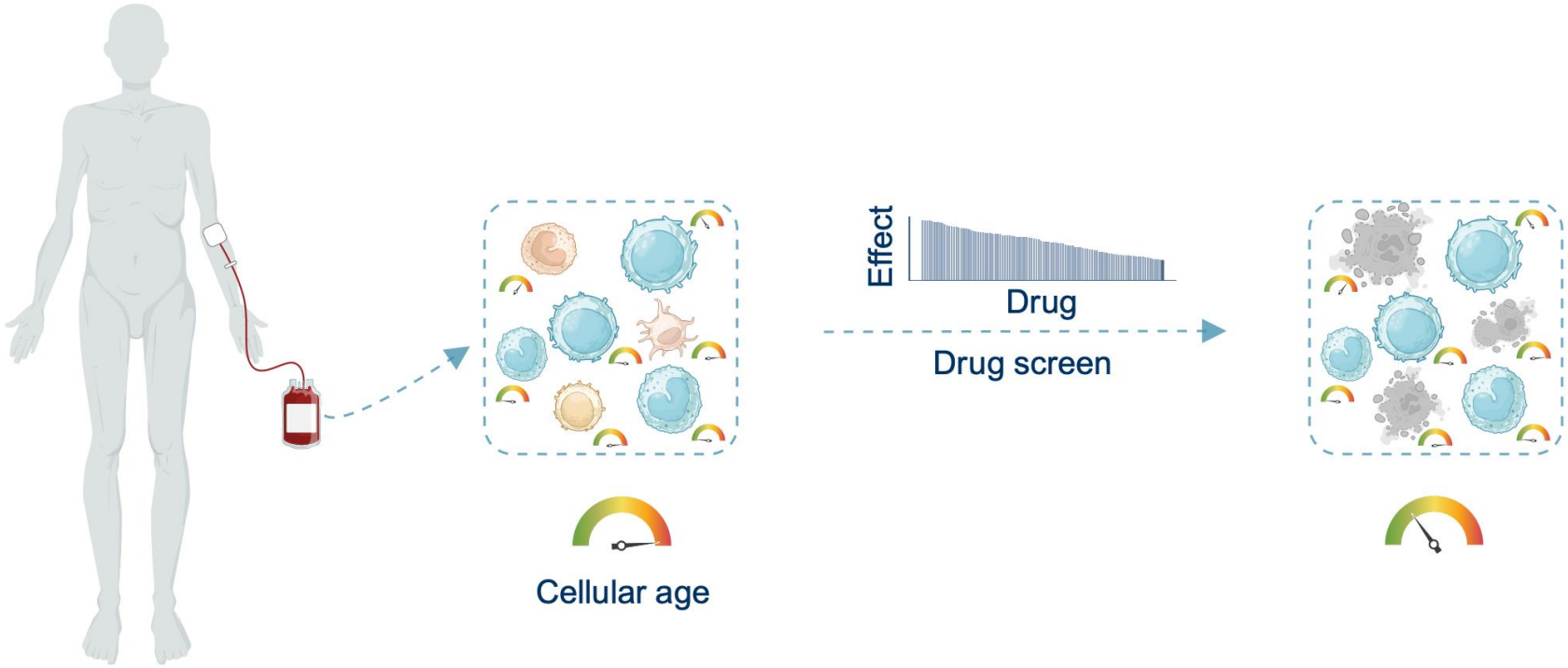
REJUVENATING THE IMMUNE SYSTEM



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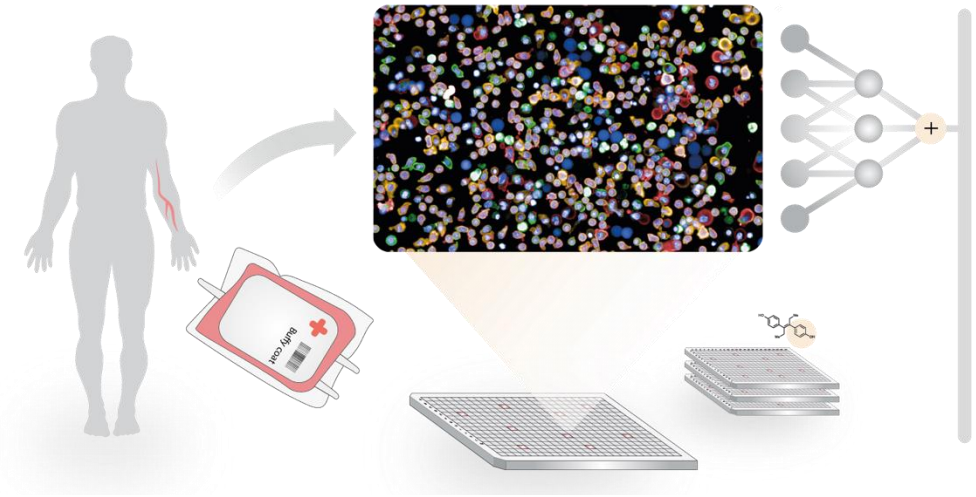
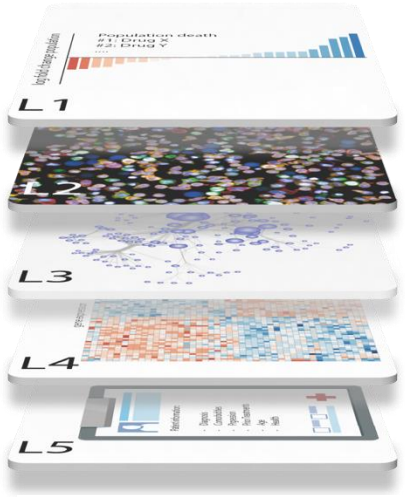
CHRONOTYPE: FUNCTIONAL PROFILING OF CELLULAR AGING FOR PERSONALIZED IMMUNE HEALTH

Multiplexed high-throughput immune cell imaging



Healthy blood donor

Hundreds of compounds



Multi-modal readouts

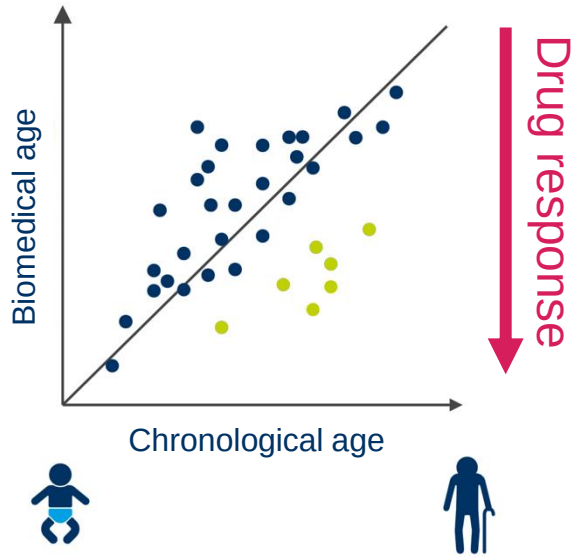
Immune toxicity

Morphology

Immune rewiring

RNA sequencing

Donor information



Objective: Identify a novel immune health biomarker signature through multi-modal data integration to predict the 'immunological age' in healthy donors

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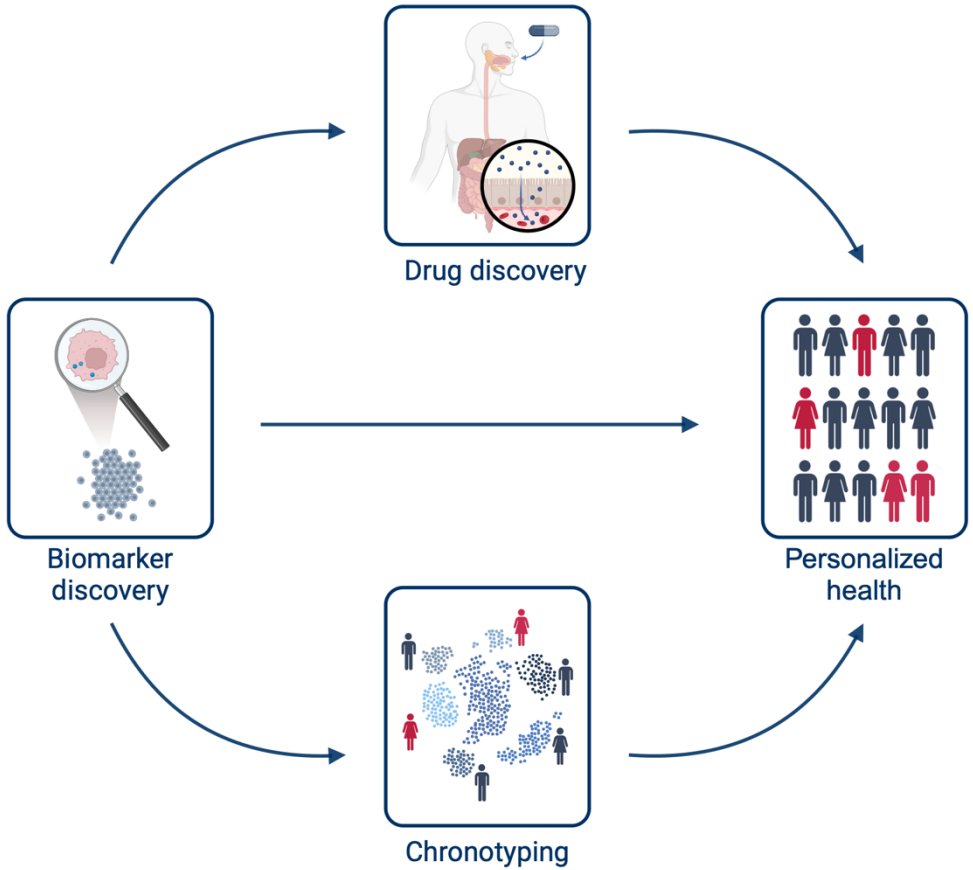
MARKET POTENTIAL IN KEY APPLICATION AREAS



Benefits

- Ex-vivo screening of immune modulatory drug candidates
- Measure the impact of immune therapy in clinical settings
- Personal immune health and immune age assessment

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KEY TAKEAWAYS

- **Prevention:** New, richer, and more affordable data—coupled with less invasive measurements—makes proactive healthcare prevention more feasible than ever.
- **Access to personalized health:** Tools will be available both within and beyond clinical settings, designed to match individual needs and enable tailored, personalized medicine.
- **AI:** Artificial intelligence will drive every stage of care, from diagnosis to intervention planning and ongoing follow-up, ensuring more precise and adaptive healthcare.

CONTACT US!

Tim Heinemann, PhD
Senior Computational Biologist
tim.heinemann@csem.ch

FACING THE CHALLENGES OF OUR TIME