INVESTING IN LONGEVITY

Longevity Industry 2022 Overview

Dmitry Kaminskiy

Deep Knowledge Group
General Partner

Davos, 25 May 2022

Longevity Financial Advisors

DEEP KNOWLEDGE GROUP

LONGEVITY CAPITAL

www.longevity.network

My Scientific Godfathers / Year 2013

Health is The New Wealth

- MONEY THERE...
TOP
BILLIONAIRE
NETWORTH

Making Longevity Industrialization My Life’s Work

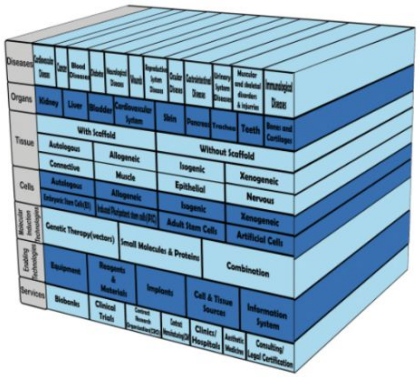
Aging Analytics Agency

was established in London in 2013

www.aginganalytics.com

Produced by Aging Analytics Agency in 2014

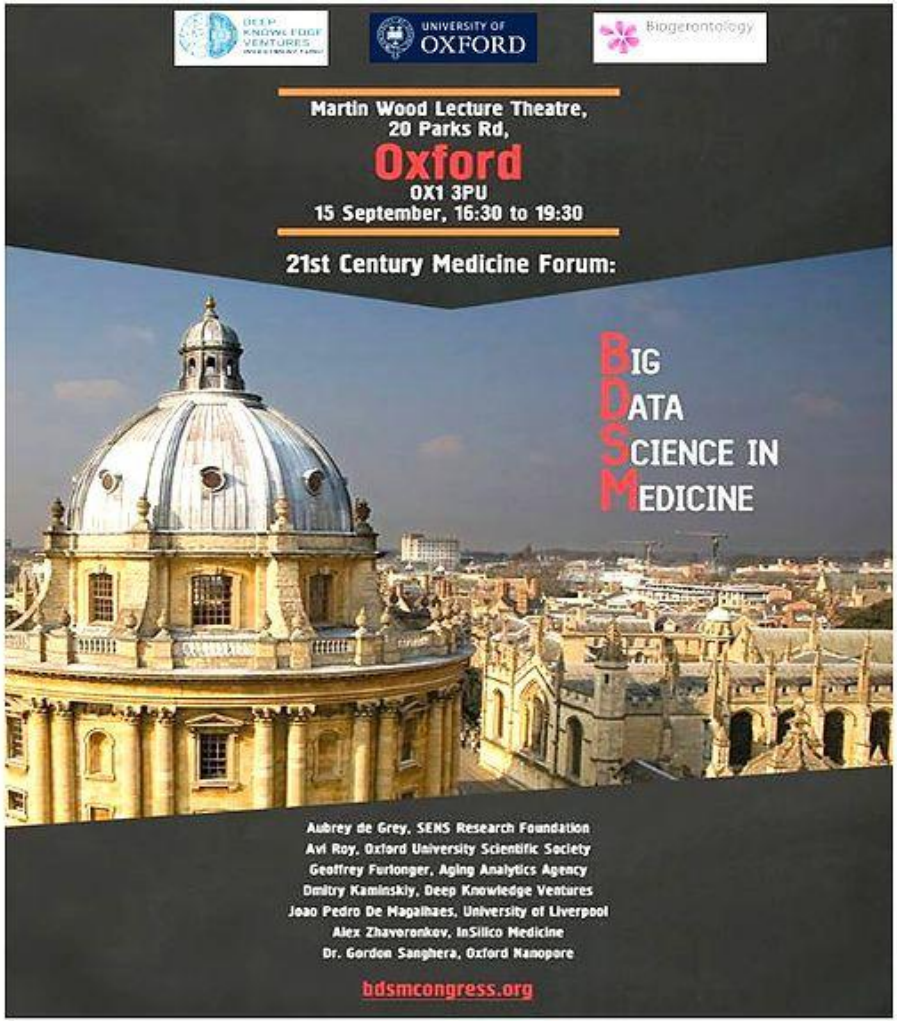
Produced by Aging Analytics Agency in 2014



Analytical Regenerative Medicine Industry Framework

Produced by Aging Analytics Agency in 2013

www.aginganalytics.com



Dmitry Kaminskiy Presents and Deep Knowledge Group Co-Hosts Big Data Science in Medicine 2014 at Oxford University

UNIVERSITY OF OXFORD

$1 Million Prize for Person to Beat the Current Human Longevity Record

With the aim of getting the ball rolling in the emerging longevity industry, Dmitry Kaminskiy announced a $1 million prize for the first person to reach the age of 123 - just 6 months longer than the current record holder, Jeanne Calment, who achieved 122 years and 6 months age.

Life record of 122.5 by Jeanne Calment

Forbes

9,115 views | Apr 21, 2015, 12:40 pm

Venture Capitalist Promises $1M To First Person To Reach 123rd Birthday

Sarah Hedgecock Forbes Staff
Pharma & Healthcare

Venture capitalist Dmitry Kaminskiy thinks he has what it takes to lengthen people's life spans: a million-dollar prize, which he will award to the first person to beat the current longevity record and reach his or her 123rd birthday.

November 2016, London

The Economist Conference Aging Societies

Panel Discussion with Lombard Odier and Generali

Longevity Conferences by Top-Tier Financial Corporations and Brands

Longevity Conferences by Top-Tier Financial Corporations and Brands

Longevity Industry: Multi-trillion Dollar Opportunity

Longevity, AgeTech & WealthTech Market

Globally
1 Billion in Retirement

In the UK
10 Million in Retirement

"The one billion retired people globally are a multi-trillion dollar opportunity for business"

~ Dmitry Kaminskiy, interview in the Financial Times

FT FINANCIAL TIMES

"The global spending power of those aged 60 and over will reach $15 trillion annually by 2020"

~ Bank of America Merrill Lynch

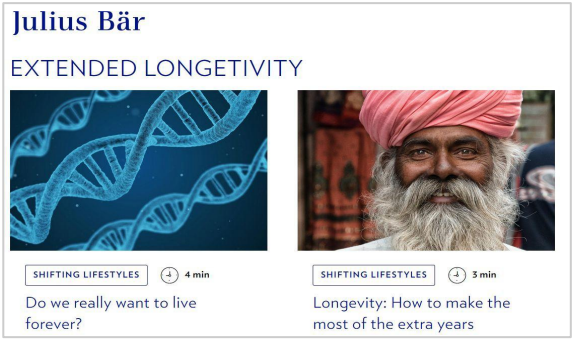
BANK OF AMERICA

Top-Tier Financial Institutions and Business Analytics Firms Show Interest in Longevity Through Conferences and Reports

CREDIT SUISSE

Credit Suisse featured Health and Aging as one of four main themes in their 2018 Global MegaTrends Conference

Julius Baer held a major forum on the topic of "Investing in Longevity" featuring a keynote presentation by Aging Analytics Agency Founder Dmitry Kaminskiy



UBS featured "Living to 150" as one of six major topics in their 2018 Healthcare Summit, featuring a keynote presentation by prominent Longevity entrepreneur Alex Zhavoronkov

UBS also issued a report on the "largest survey of wealth investors in the world to date", concluding: "Don't let skepticism about living to 100 keep you from planning for it. Life expectancies are rising, and it's a real possibility. In fact globally, nine in 10 investors are already adjusting how they are planning for their life and their legacy."

CitiBank released a landmark report detailing the rise of the Longevity Industry, and highlighting it as one of the quickest-rising sectors being driven by disruptive innovation today.

FROST & SULLIVAN

Frost and Sullivan also released two prominent reports on the emerging Longevity Industry, and in 2018 created the "Award for Innovation in Artificial Intelligence for Aging Research and Drug Development"

2017-2019 was a period of massive on-boarding of the topic of Longevity by top-tier financial corporations and brands, with numerous conferences on the Longevity Industry by The Economist, Financial Times, Deloitte, Julius Baer, UBS and others

FINANCIAL TIMES LIVE

12:10pm **Aging and Longevity**

Dmitry Kaminskiy, Co-Founder and Senior Partner, *Deep Knowledge Ventures*

Alex Zhavoronkov, CEO, *Insilico Medicine*

Joseph Antoun, Chairman & CEO, *L-Nutra ;* Chairman, *Global Healthspan Policy Institute*

Aubrey de Grey, Vice President of New Technology Discovery, *AgeX Therapeutics*

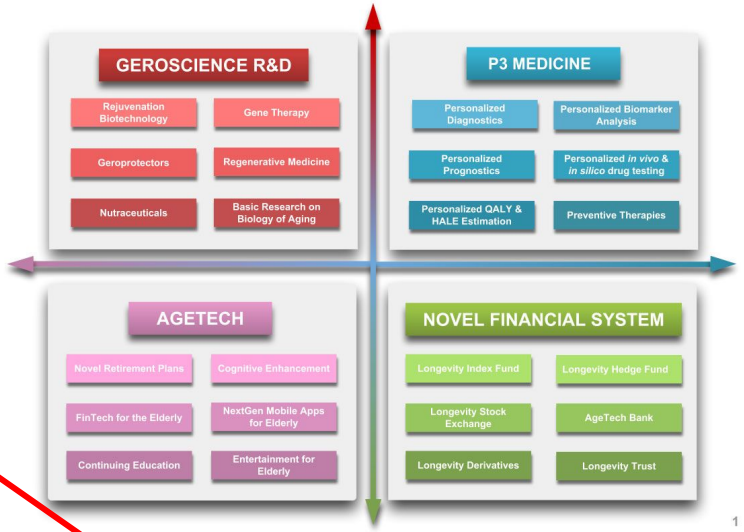
International Longevity Policy Activities

Dmitry Kaminskiy provided the initial financial and organizational support for the formation of the UK All-Party Parliamentary Group for Longevity (the world's first Longevity-focused parliamentary group) and Served as a Co-Founder of the APPG Secretariat from 2019-2021

Official Launch All-Party Parliamentary Group for Longevity
House of Lords, London, UK

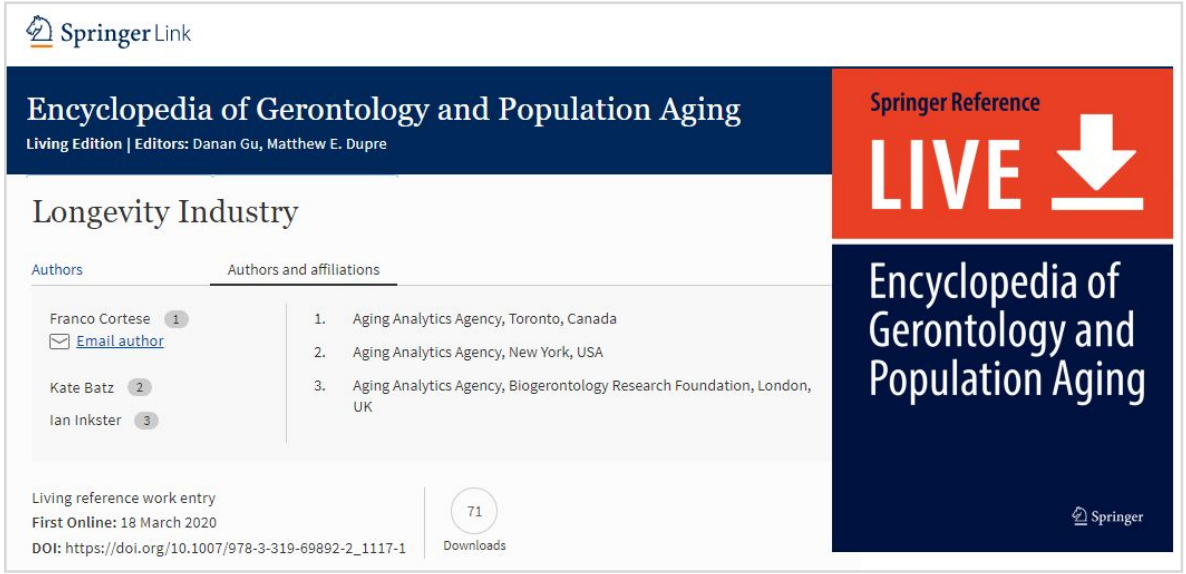
All Party Parliamentary Group for Longevity Inaugural Meeting
House of Lords, London, UK

Aging Analytics Agency was the First to Formulate in 2018 the Term 'Longevity Industry'

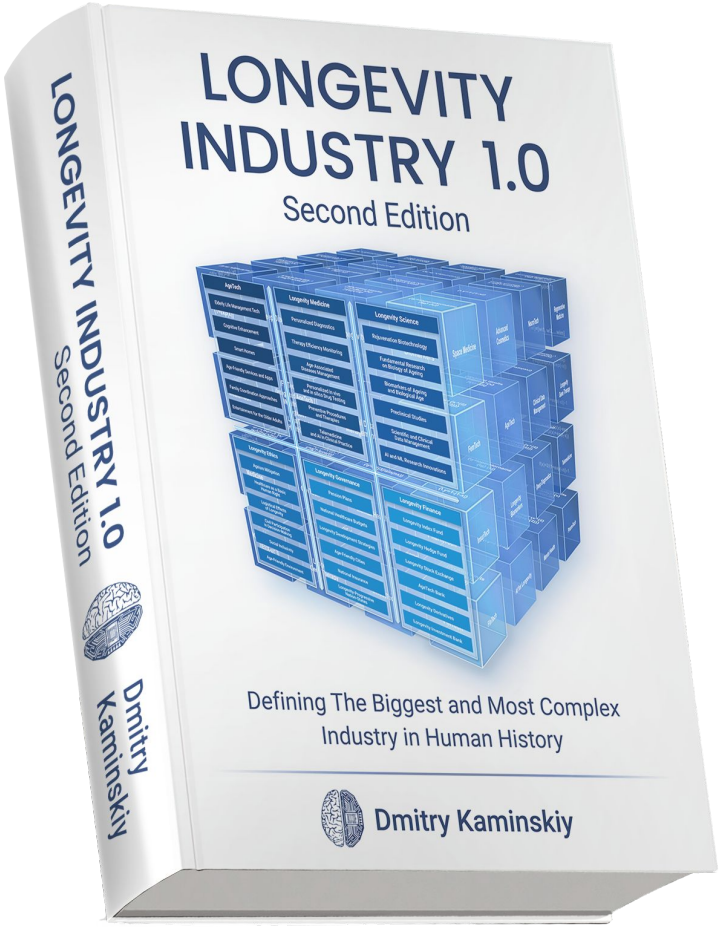


Deep Knowledge Group's work toward creating a truly comprehensive, actionable and relevant Longevity Industry Framework began in earnest through the release of its first formal industry framework in 2017/2018 through the publication Aging Analytics Agency's 1000+page *Longevity Industry Landscape Overview 2018* (*Volume I: The Science of Longevity* and *Volume II: The Business of Longevity*),

Defining the Longevity Industry for the First Time



Aging Analytics Agency also contributed the **official definition** and entry of the '*Longevity Industry*' in the ***Encyclopaedia of Gerontology and Population Aging***, the world's largest and most definitive encyclopaedia on aging and Longevity compiled and edited by Danan Gu (**Population Division of the United Nations**, Department of Economic Social Affairs Population Division, New York USA).



LONGEVITY INDUSTRY 1.0

Second Edition

Defining the Biggest and Most Complex Industry in Human History

www.longevity-book.com/one

Most Comprehensive Longevity Industry Framework 2021

Longevity Science

- Rejuvenation Biotechnology
- Basic Research on the Biology of Aging
- Geroprotectors
- Regenerative Medicine
- Nutraceuticals
- Gene Therapy

Longevity Medicine

- Personalized Diagnostics
- Personalized HALE and QALE Estimation
- Personalized Prognostics
- Personalized In Vivo and In Silico Drug Testing
- Preventive Therapies
- Participatory Medicine

AgeTech

- NeuroTech
- Cognitive Enhancement
- Smart Homes
- NextGen Mobile Apps for the Elderly
- Continuing Education
- Entertainment for the Elderly

Longevity Finance

- Longevity Index Fund
- Longevity Hedge Fund
- Longevity Stock Exchange
- AgeTech Bank
- Longevity Derivatives
- Longevity Investment Bank

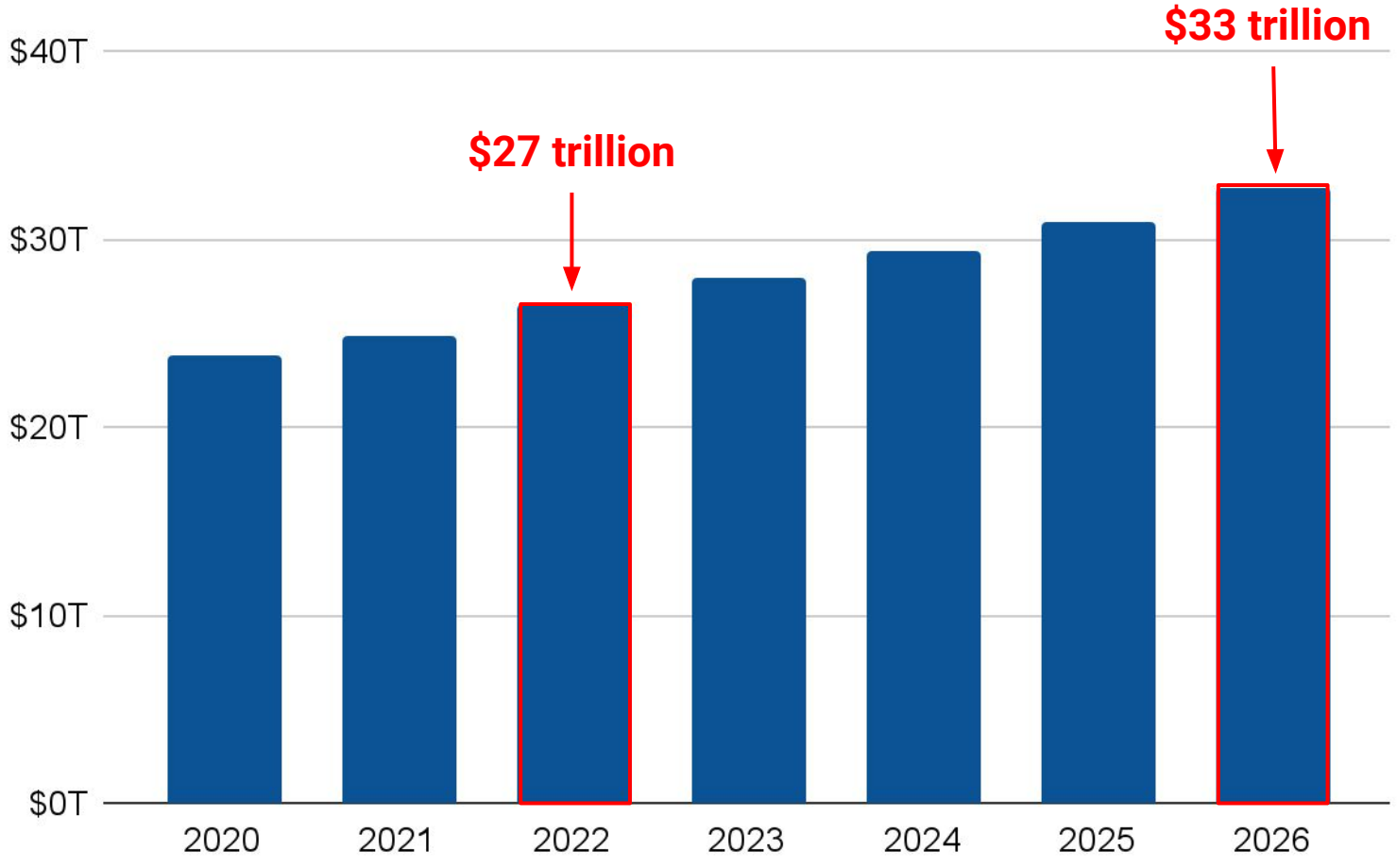
Longevity Governance

- Pension Plans
- National Healthcare Budgets
- Longevity Development Strategies
- Elderly Care Programs
- National Insurance
- Elderly Education

Longevity Ethics

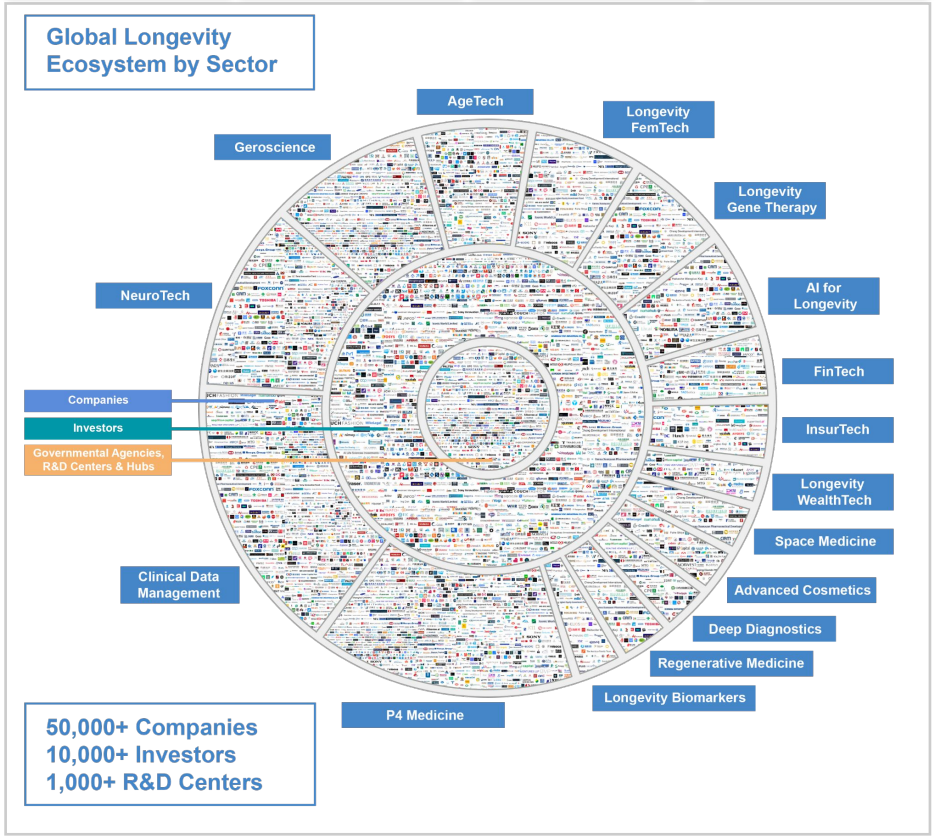
- Agism Mitigation
- Civil Participation
- Logistical Effects of Longevity
- Age-friendly Environment
- Social Inclusivity
- Healthcare as a Basic Human Right

The Global Longevity Economy Scale Projection



Deep Knowledge Group Owns the Largest Longevity Industry Database in the World

50,000 Companies	10,000 Investors	1,000 Hubs	20 Sectors



USA	UK
Canada	India
Japan	China
Sweden	Germany
Switzerland	Spain
CEE*	Singapore
Portugal	France
Brazil	Australia
MENA Region	EU

www.longevity.international

Global Longevity Ecosystem - 50 000 Companies

Longevity Science

Longevity Biomarkers

AI for Longevity

NeuroTech

PharmTech

Longevity WealthTech

FinTech

InsurTech

AgeTech

Wellness & Fitness

Space Medicine

Longevity FemTech

Advanced Cosmetics

Clinical Data Management

Mental Health

Deep Diagnostics

Regenerative Medicine

Longevity Gene Therapy

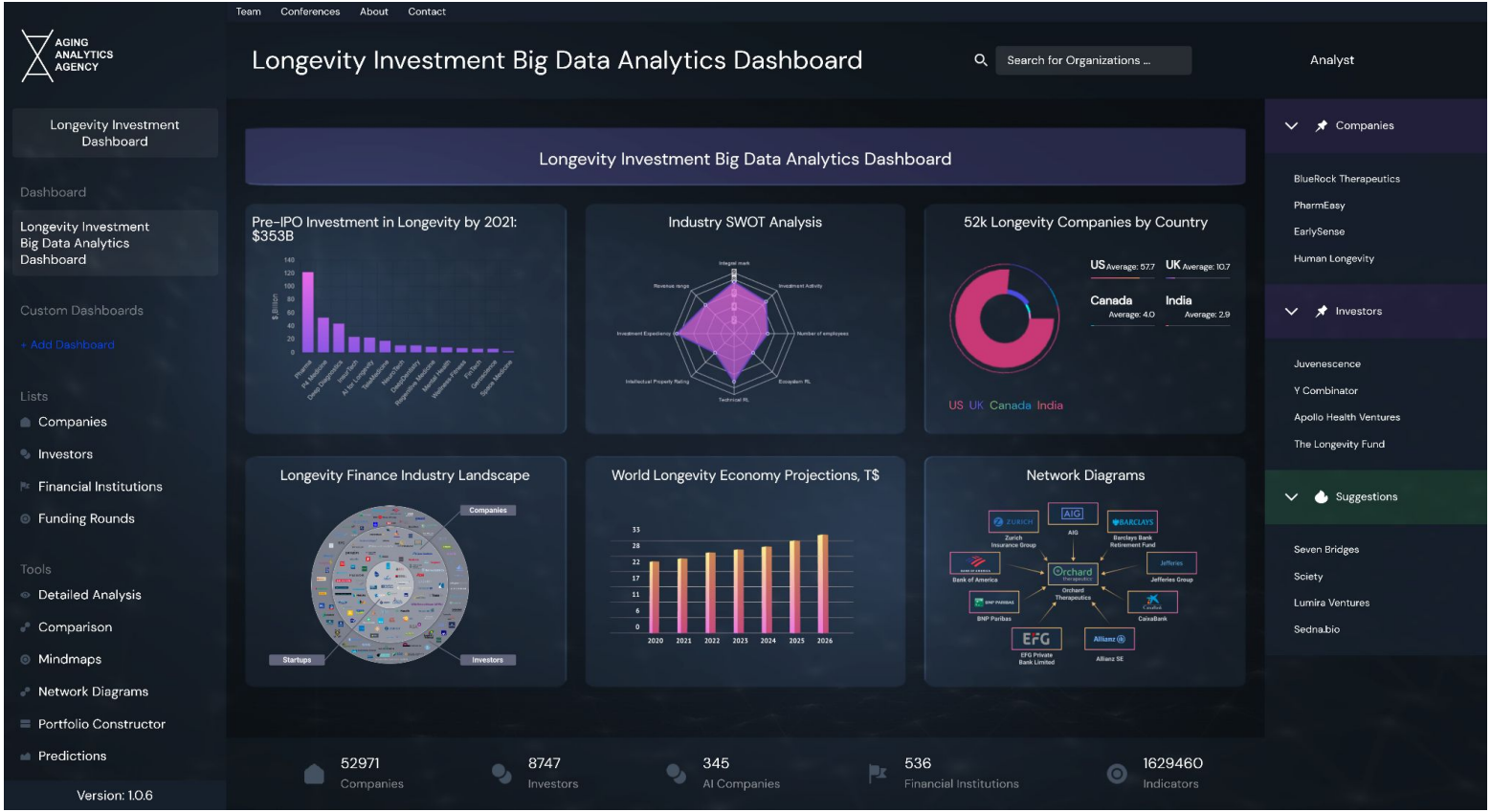
Longevity Medicine

Telemedicine

www.longevity.international/global-longevity-ecosystem

www.longevity-journal.info

Longevity Investment Big Data Analytics AI-driven System and Dashboard



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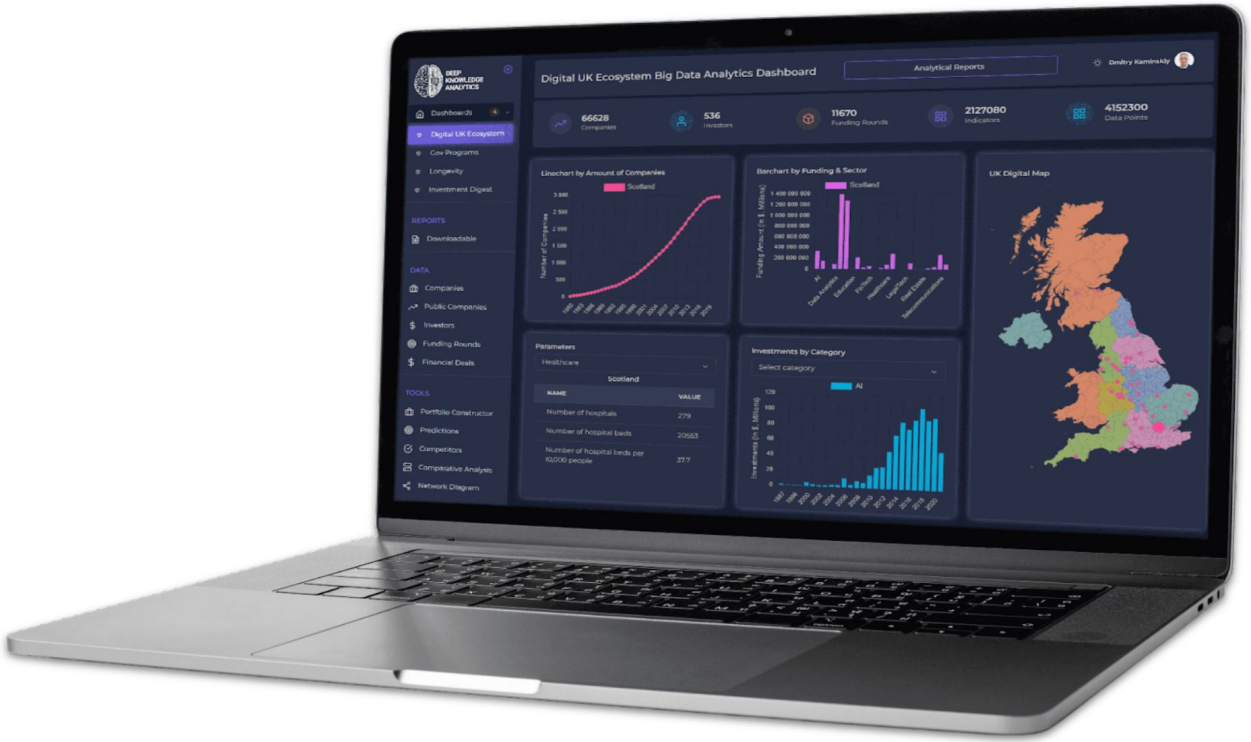
Longevity Publicly Traded Companies
Big Data Analytics Dashboard



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Longevity Investment Dashboard Platform Features Overview

Deep Knowledge Group **dashboard platform analyzes millions** of **data points** on **investors**, **public** & **private companies** including **startups**, sectors & subsectors and provides **tools of** swot analysis, competitors, comparative analysis, portfolio construction, mindmaps, statistics to help you analyze **opportunities**.

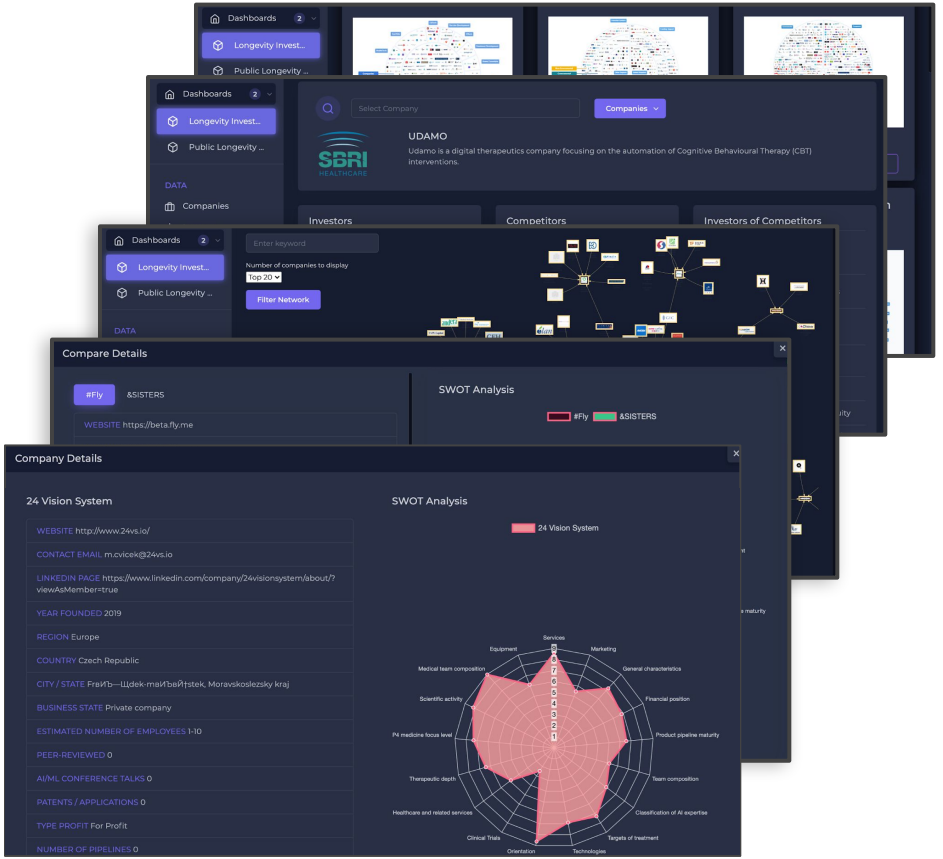
50,000+ Companies

10,000+ Investors

160+ Subsectors

DKG Dashboards Tools

- Portfolio Constructor
- Competitors
- Comparative Analysis
- Network Diagrams
- Mindmaps
- Statistics

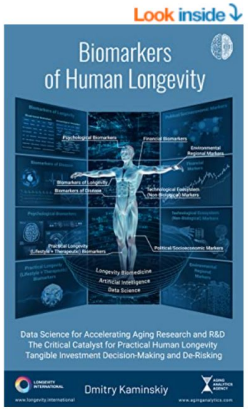


www.deep-innovation.tech

www.longevity-book.com

www.longevity-book.com

www.longevity-book.com/biomarkers



Biomarkers of Human Longevity: Data Science for Accelerating Aging Research and R&D The Critical Catalyst for Practical Human Longevity Tangible Investment Decision Making and De-Risking

Kindle Edition

by Dmitry Kaminskiy (Author) | Format: Kindle Edition

See all formats and editions

Kindle	Paperback
$20.00	$50.00

Read with Our **Free App** | 1 New from $50.00

There is perhaps no other single technology or industry subsector, with the exception of AI, that has more potential to accelerate the realization of real-world impacts in Longevity across the full scope of its sectors and domains - industry, policy, investment, entrepreneurship, policy, and governance - than Biomarkers of Human Longevity.

- **Data Science for Accelerating Aging Research and R&D**
- **The Critical Catalyst for Practical Human Longevity**
- **Tangible Investment Decision-Making and De-Risking**

Longevity Biomarkers Landscape Q1 2022

Companies - 300
Investors - 495
R&D Centres - 235
Non-Profits - 7

AI Biomarkers

Digital Biomarkers

Systemic Biomarkers

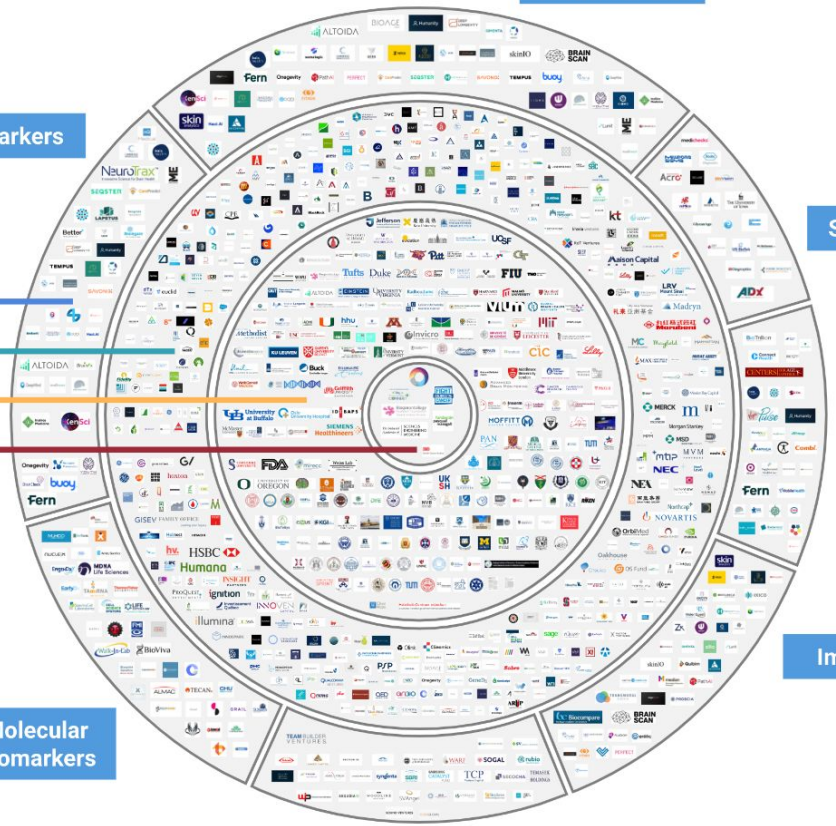
Companies

Investors

R&D Centres

Non-Profits

Physiological Biomarkers



Imaging Biomarkers

Molecular Biomarkers

Omic-based Biomarkers

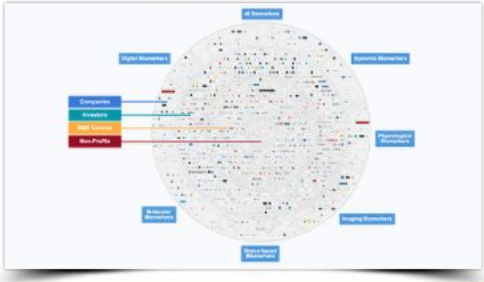
AGING ANALYTICS AGENCY

LONGEVITY.INTERNATIONAL

www.longevity.international/biomarkers

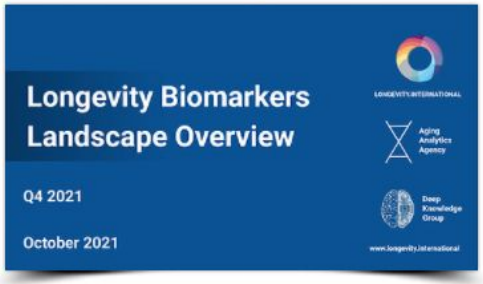
Longevity Biomarkers Ecosystem

Interactive Mindmap



View More

Full Report



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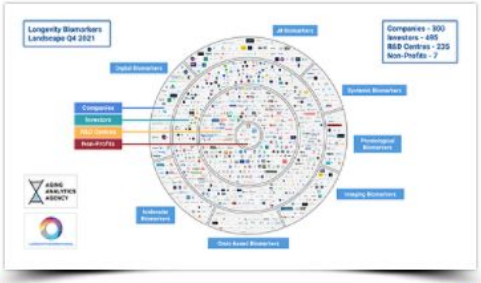
Longevity Biomarker Conferences

View More

Static Mindmap



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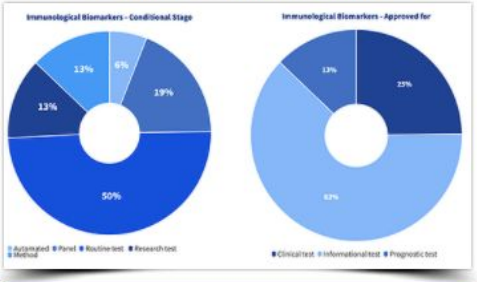
Dynamic Graphs and Charts



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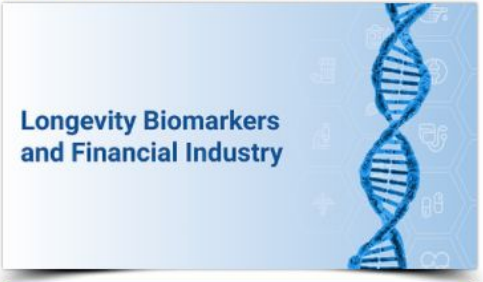
Longevity Biomarkers and Financial Industry

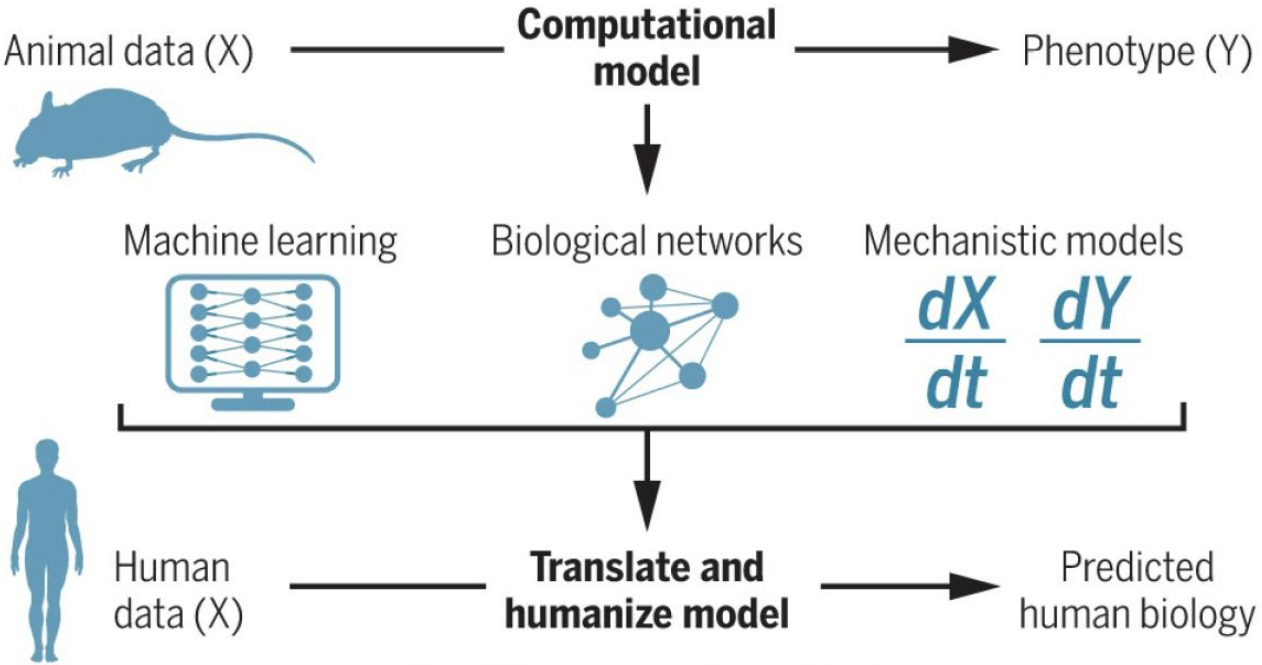


View More

www.longevity.international/biomarkers

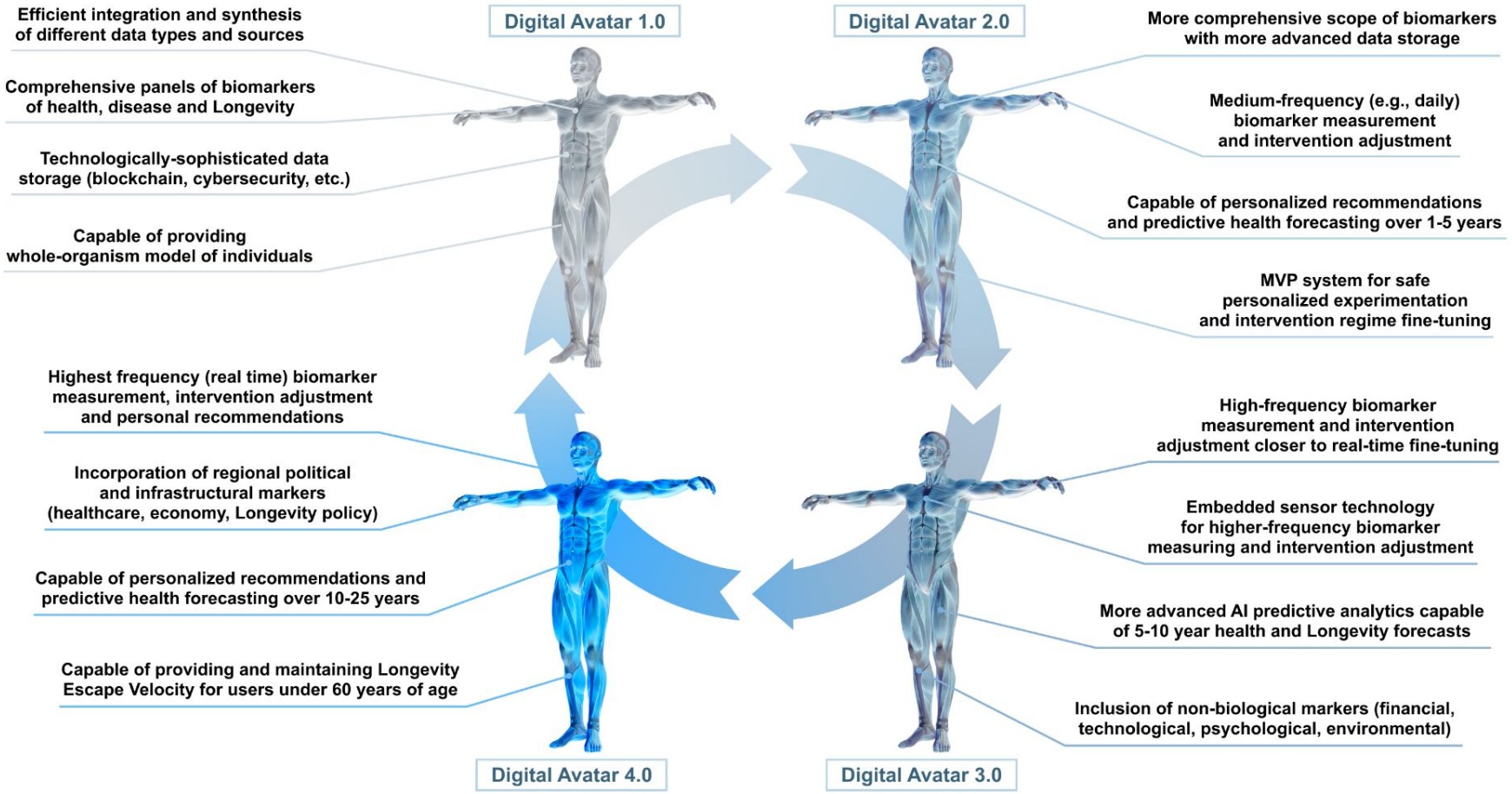
Systems model–based cross-species translation

Translating computational systems models of molecular (X) to phenotypic (Y) associations from animal models to humans provides a powerful framework for translating therapeutic concepts from preclinical to clinical stages.



Source: Translating preclinical models to humans

Digital Human Avatar Framework: 1.0, 2.0, 3.0 and 4.0



Practical Longevity

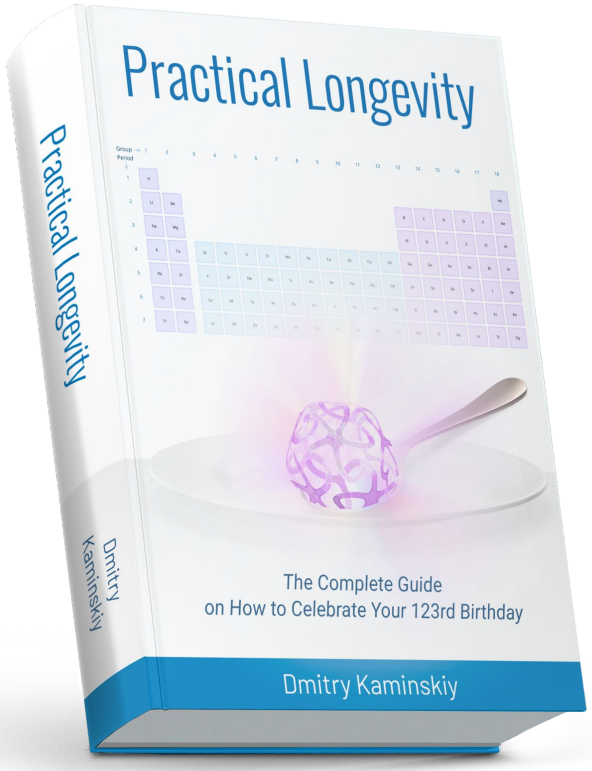
- Life Extension
- Enhanced Performance
- Extension of Healthy Productive Period of Life

Preventive
Predictive
Personalized
Longevity Medicine

Ultimate Goal - Precision Health

Proprietary Analytics: Practical Longevity

The Complete Guide on How to Celebrate Your 123d Birthday

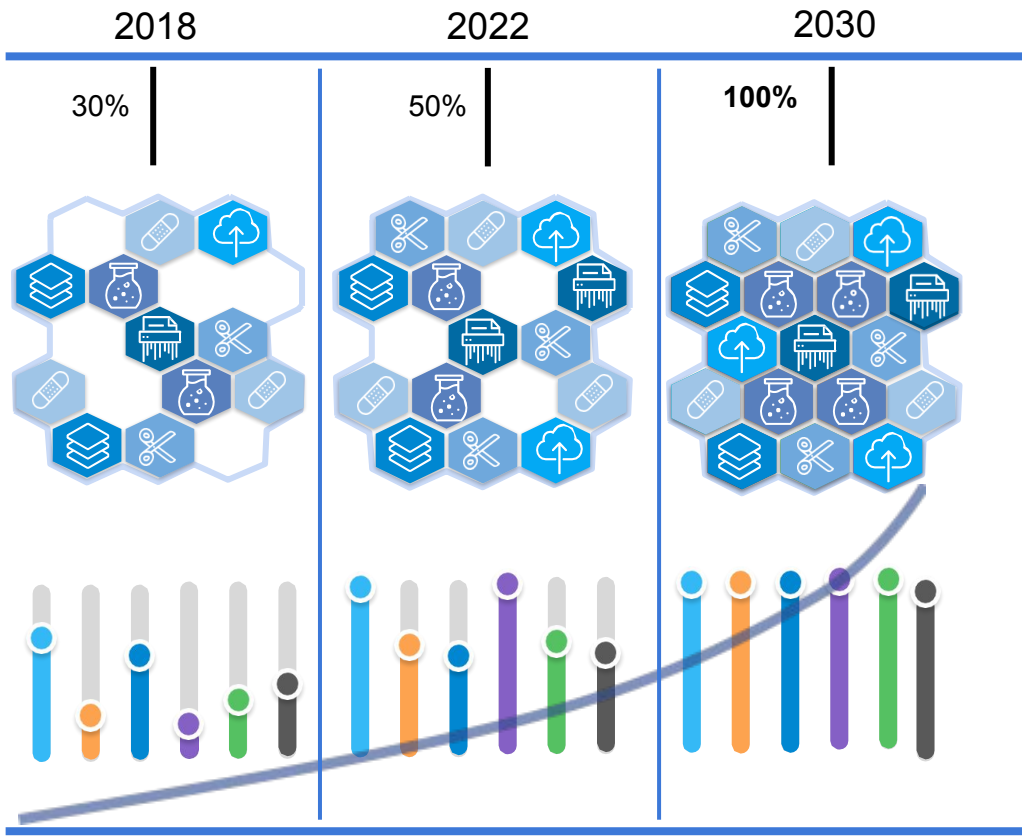


Practical Longevity Book Features

- Practical Longevity Book is divided into **5 qualitative layers,** increasing in levels of effectiveness (in terms of Practical Longevity), and technological sophistication.
- Each of the **5 layers** include technical add-ons containing practical recommendations on how to behave in specific situations in order to move to the next Longevity layer.

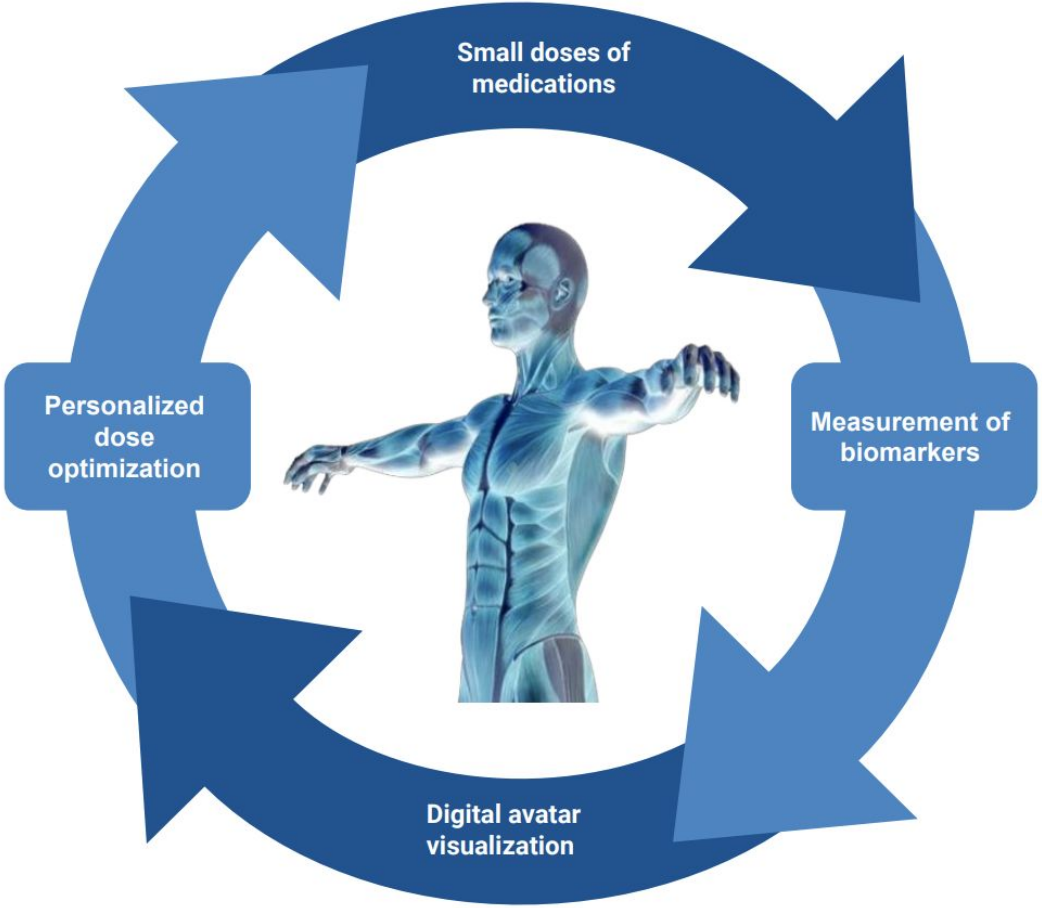
www.longevity-book.com/practical-longevity

De-Risking Longevity Investments via Technology Readiness Levels (TRLs) and Tangible Validated Forecasting of Market Readiness

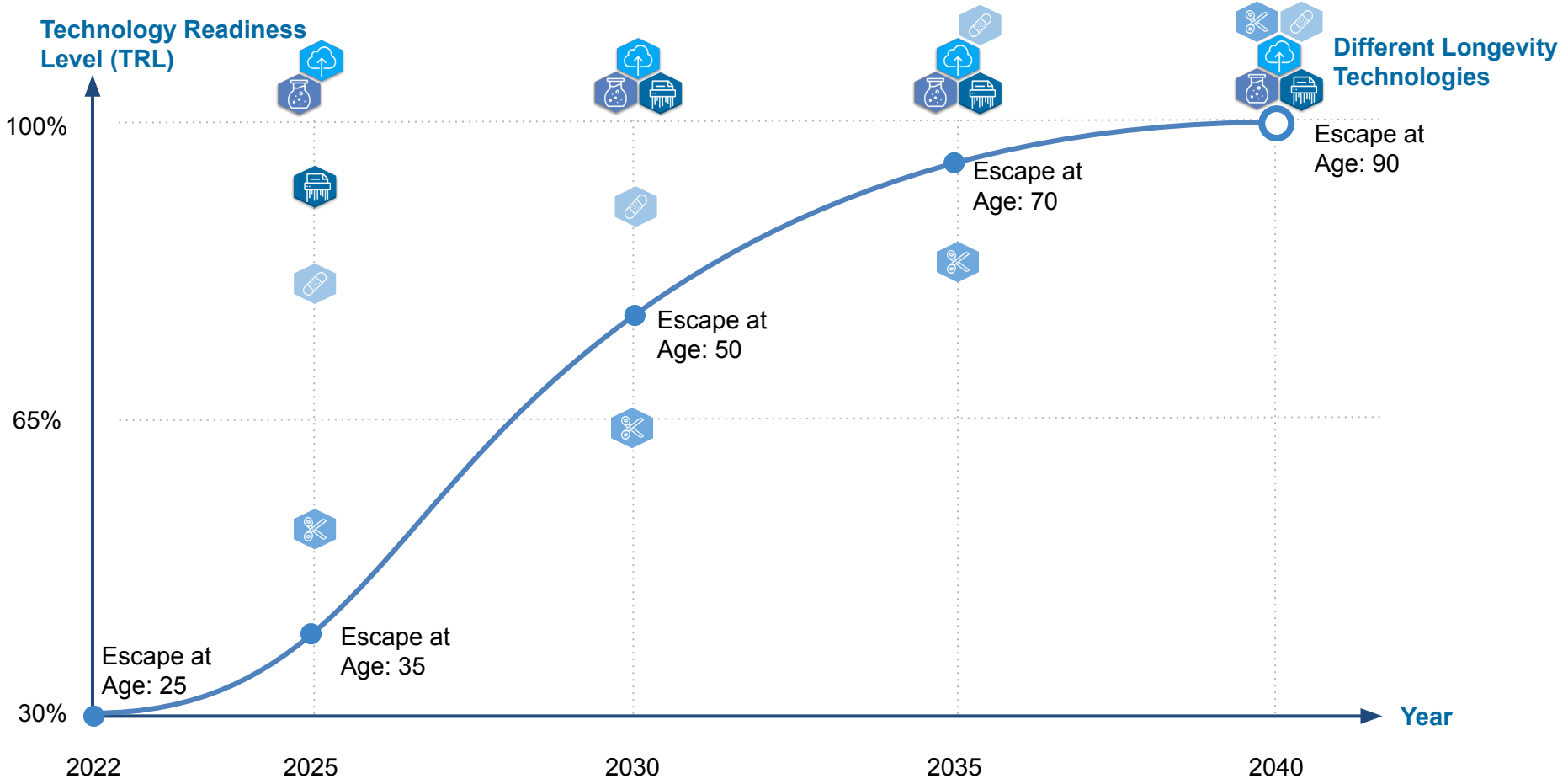


- Small Molecules and Biologics
- Next Generation Sequencing
- Stem Cell Therapy
- Bioinformatics
- Gene Therapy (CRISPR)
- 3D Bioprinting

Achieving Longevity Escape Velocity by 2030



Longevity Escape Velocity at Different Biological Age Landmarks



Practical Longevity

Intermittent Hypoxic Training - Key Technology

Scientifically validated and practically proven method to:

- enhance performance for olympic champions
- prepare austranovats for the space flight
- prepare professional alpinist
- efficient rehabilitation after Covid-19
- eliminate dysfunctional mitochondria and senescent cells
- rejuvenate mitochondria and cells
- improve cognitive function in young and elderly

Intermittent Hypoxic Training - Key Technology

Source: Aviv Clinics

3-months course of Hyperbaric Oxygen Therapy
in Aviv Clinics

www.aging-us.com AGING 2020, Vol. 12, Advance

Research Paper

Hyperbaric oxygen therapy increases telomere length and decreases immunosenescence in isolated blood cells : a prospective trial

Yafit Hachmo[1,*], Amir Hadanny[2,3,4,*], Ramzia Abu Hamed[1], Malka Daniel-Kotovsky[2], Merav Catalogna[2], Gregory Fishlev[2], Erez Lang[2], Nir Polak[2], Keren Doenyas[2], Mony Friedman[2], Yonatan Zemel [2], Yair Bechor[2], Shai Efrati[1,2,3,5]

ABSTRACT

Introduction: Aging is characterized by the progressive loss of physiological capacity. At the cellular level, two key hallmarks of the aging process include telomere length (TL) shortening and cellular senescence. Repeated intermittent hyperoxic exposures, using certain hyperbaric oxygen therapy (HBOT) protocols, can induce regenerative effects which normally occur during hypoxia. The aim of the current study was to evaluate whether HBOT affects TL and senescent cell concentrations in a normal, non-pathological, aging adult population.

Methods: Thirty-five healthy independently living adults, aged 64 and older, were enrolled to receive 60 daily HBOT exposures. Whole blood samples were collected at baseline, at the 30th and 60th session, and 1-2 weeks following the last HBOT session. Peripheral blood mononuclear cells (PBMCs) telomeres length and senescence were assessed.

Results: Telomeres length of T helper, T cytotoxic, natural killer and B cells increased significantly by over 20% following HBOT. The most significant change was noticed in B cells which increased at the 30th session, 60th session and post HBOT by 25.68%±40.42 (p=0.007), 29.39%±23.39 (p=0.0001) and 37.63%±52.73 (p=0.007), respectively.

There was a significant decrease in the number of senescent T helpers by -37.30%±33.04 post-HBOT (P<0.0001). T-cytotoxic senescent cell percentages decreased significantly by -10.96%±12.59 (p=0.0004) post-HBOT.

In conclusion, the study indicates that HBOT may induce significant senolytic effects including significantly increasing telomere length and clearance of senescent cells in the aging populations.

Aviva Clinic in Israel published a paper in late 2020 claiming to have achieved human healthspan extension via Hyperbaric Oxygen Therapy.

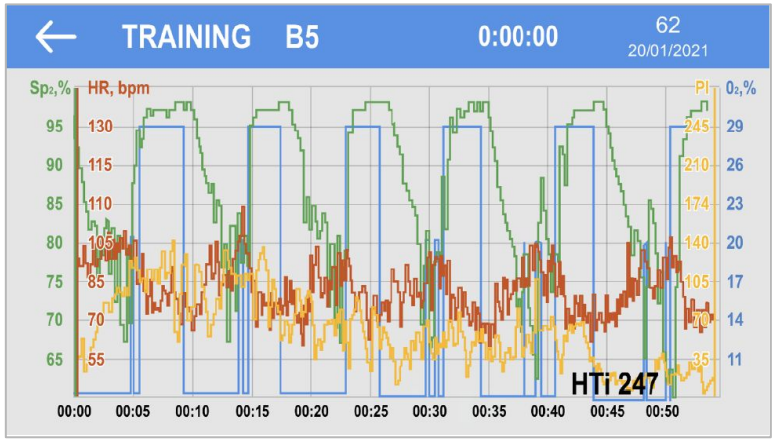
They demonstrated this via 2 specific biomarkers, increasing telomere length by 20% and a ~35% clearance of senescent immune cells.

IHHT - Intermittent Hypoxic-Hyperoxic Training (Mitopro)

Portable, user-friendly equipment.
May be used at home as a high-tech wellness option.

Longevity Personal Trainings

While my highest result to date was an HTI of 819, typically I am doing intensive trainings in the range of 300-500 HTI, which is a standard level for professional alpinist, high-performance athletes and marathon runners, and in a more relaxed daily mode I am doing trainings in the range of 170-250 HTI.



More on this topic could be found in my new book “Practical Longevity”.

www.longevity-book.com/practical-longevity

My personal result

Longevity Escape Velocity

2022

My chronological age: 46
My biological age: 45

2030

Longevity Escape Velocity

My chronological age: 54
My biological age: 50

2040

My chronological age: 64
My biological age: 34

Deep Knowledge Group

Building Financial Infrastructure for Emerging Longevity Industry

Longevity Financial Advisors

DEEP KNOWLEDGE VENTURES

LONGEVITY CAPITAL

Deep Knowledge Group's Longevity Finance Activities

Data Science-Driven Financial and Investment Projects

Longevity Financial Advisors

DEEP KNOWLEDGE VENTURES

LONGEVITY CAPITAL

Built by Deep Knowledge Group:

- Longevity.Capital
- Longevity Banking Card
- Longevity Financial Advisors
- AMCs and Performance Trackers
- Longevity Investment IT Platform
- Big Data Investment Analytics Dashboard
- Longevity-Focused Structured Financial Products
- Automated Due diligence, SWOT analysis, De-risking

Longevity Card

Longevity Card Marketplace Partners:

TransferWise
babylon
headspace
mediQuo
F45
URBAN
Skadoosch.
Cera+
BABY 2 BODY.
yogaia
FOOD STORIES
buddi
CHARITY MILES
CLOSCA
FIIT
DISCOVER365 Travel & Lifestyle
BOXING CLUB KOBOX EST. 2015 KING'S ROAD
BEAUTY BOOKER
Fitr TRAINING
emjoy
wise
bioniq
CHRONOMICS
DNA FIT
mynurva
OcuShield
MEDITOPIA
Rover
GENEPLANET
KOKOON
SUPERBETTER
auro

www.longevity.cards

Longevity Card: HealthTech Integration

HEALTHSPAN AND FITNESS GAMIFICATION

LONGEVITY POINTS

DAILY ACTIVITY ANALYSIS

SLEEP ANALYSIS

AI POWERED PERSONALISED RECOMMENDATIONS

WEARABLES COMPATIBLE

LONGEVITY STORIES

NUTRIENT TRACKING

www.longevity.cards

Longevity
Club Card + Banking Card

Longevity Banking Card

Longevity Club Membership Card

Under Development Deep Knowledge Group Target Milestones in 2023-2024:

- Longevity Hedge Fund
- Longevity Investment Bank
- Longevity Stock Exchange

LONDON LONGEVITY FINANCIAL CLUB

JUNE 21, 2022

LONDON

To RSVP please register here

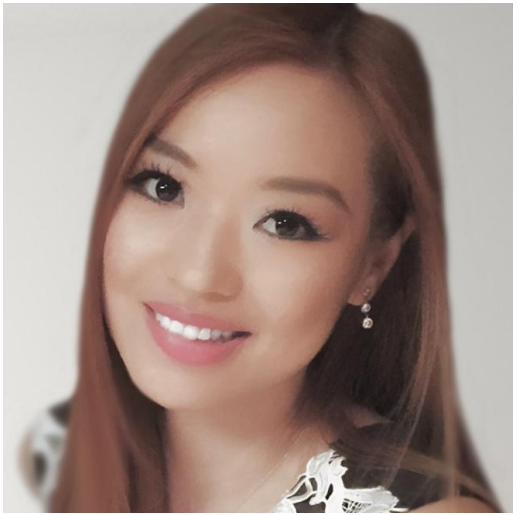
- Longevity Financial Industry and the New Asset Class
- Private Equity, Venture Capital, Public Markets
- Commoditization of DeepTech and Longevity
- De-Risking and Optimization of Investments
- Novel Financial Products and Derivatives

Oxford and Cambridge Club
71 Pall Mall, London, SW1Y 5H

www.longevity.network/finance-london

Stefan Hascoet

Managing Partner
Head of Deep Knowledge Ventures Suisse



Cecilia Yu

Head of UK and Europe, Managing Partner of Longevity.Capital

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Longevity Book

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