

THE RISK OF LIVING LONGER

Thank you for joining us –
the webinar will start shortly




Douglas and Uli ask the ultimate question of human longevity for financial institutions:

How long can we go?



Season 2 program

Session 1 Sept 10th, 2024	<i>Longevity Science – Advancing from Cure to Prevention</i>	<ul style="list-style-type: none">• Dominik Thor, Geneva College of Longevity Science	Today!
Session 2 Oct 2024	<i>Behavio(u)ral change</i>	<ul style="list-style-type: none">• Further details coming soon	
Session 3 Nov 2024	<i>Quantifying the effects of geroscience</i>	<ul style="list-style-type: none">• Further details coming soon	
Session 4 Dec 2024	<i>Preventing dementia</i>	<ul style="list-style-type: none">• Further details coming soon	

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THE RISK OF LIVING LONGER

Longevity Science – Advancing from Cure to Prevention



Douglas Anderson
(Chair)

Club Vita



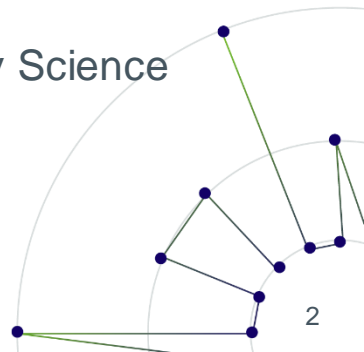
Ulrich Stengele
(Chair)

Nationwide Financial



Dominik Thor
(Panelist)

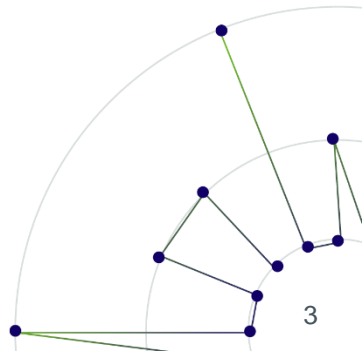
Geneva College of Longevity Science



Poll question

“How familiar are you with the field of Longevity Science?”

- *Never heard of it*
- *I’ve heard of it, but I’m not entirely sure what it is*
- *I think I have a good understanding of the field*
- *I am an expert in the field of longevity science*



Webinar Series: **The Risk of Living Longer**

Longevity Science – Advancing From Cure To Prevention

Dr. Dominik Thor, MSc

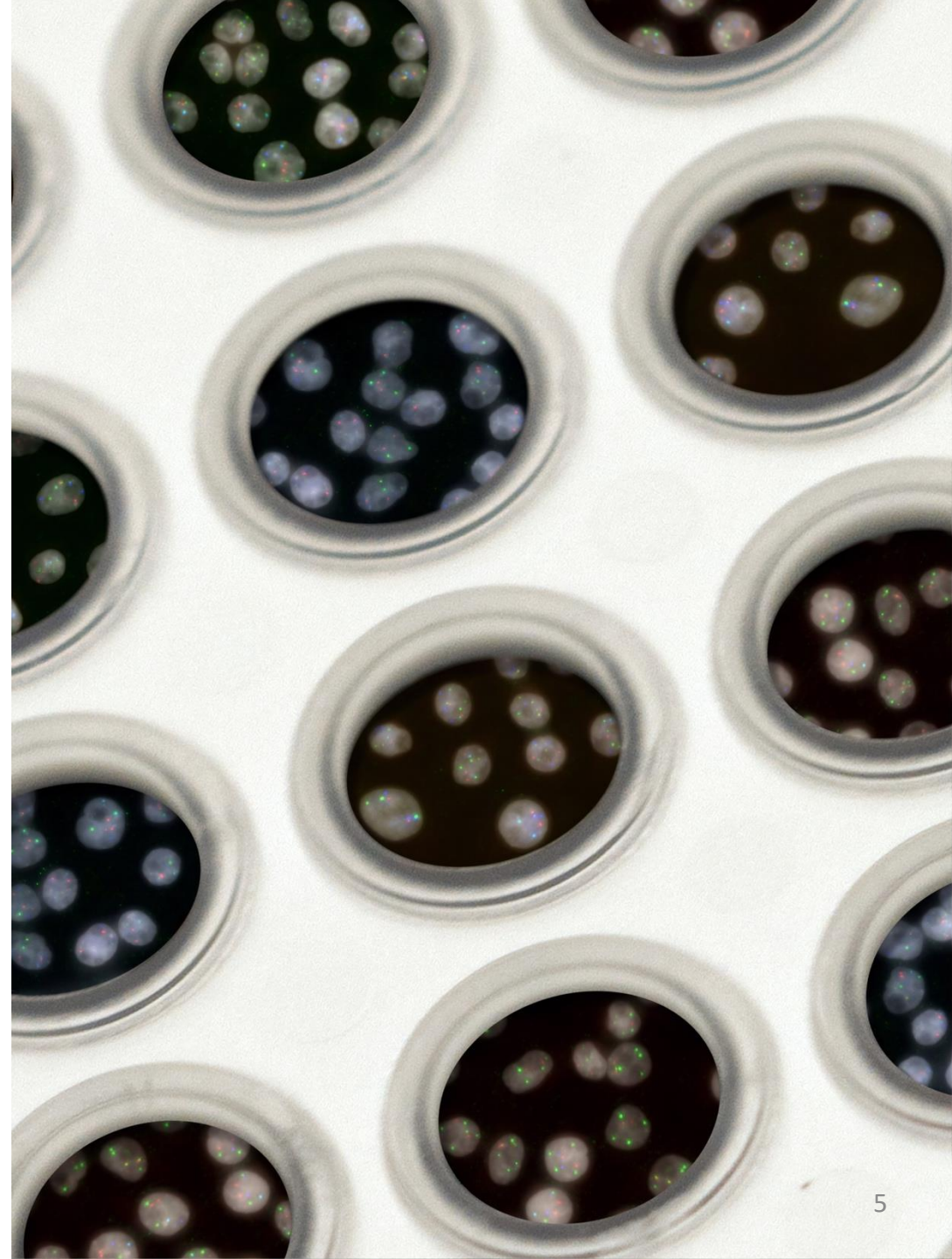
President Geneva College of Longevity Science, Professor of Pharmacy

Webinar Series: The Risk of Living Longer

Longevity Science – Advancing From Cure To Prevention

1. What is Longevity Science?

Regardless of the specific diseases that are identified as the leading causes of death, old age always is their predominant risk factor. Researchers in longevity, therefore, argue that age itself is the ultimate leading cause of death. This perspective challenges traditional views and underscores the importance of addressing aging as a medical condition.

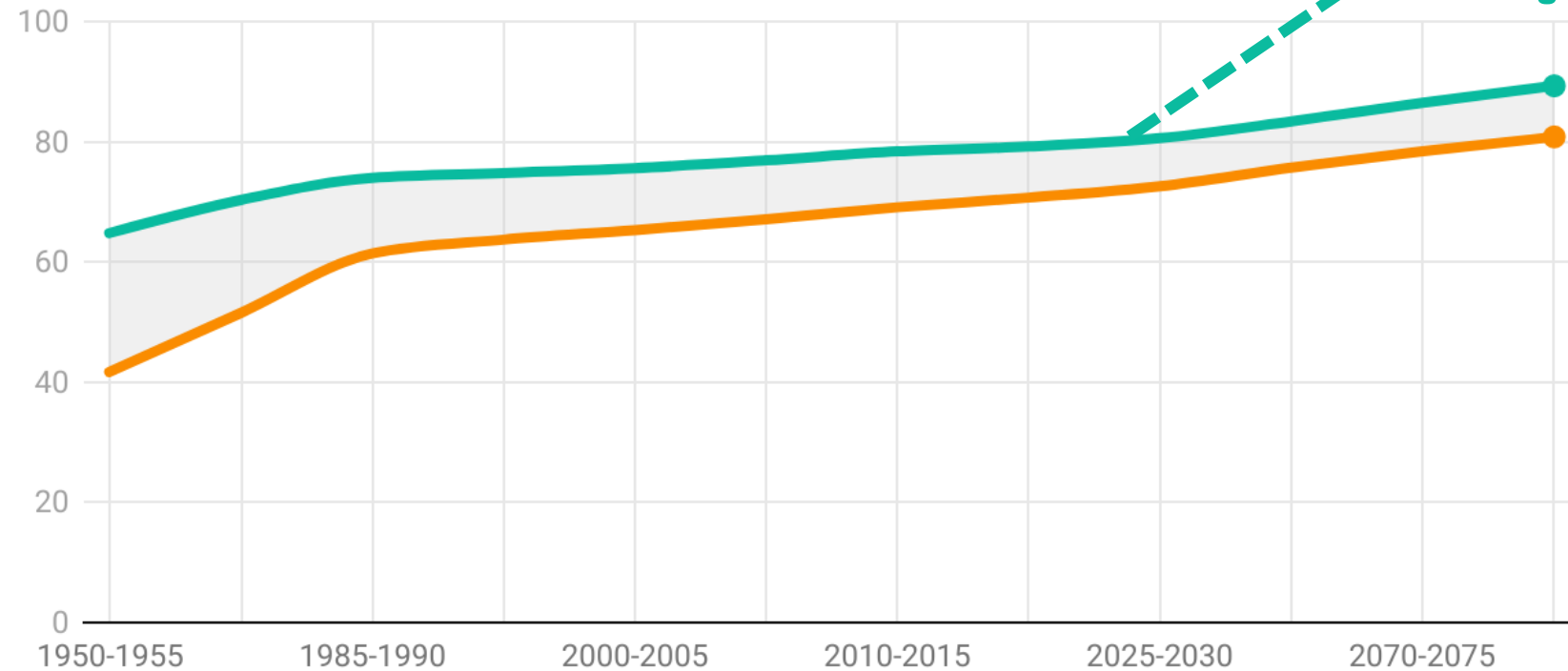


Increasing Life Expectancy has Sparked Interest in Longevity.

Living Longer

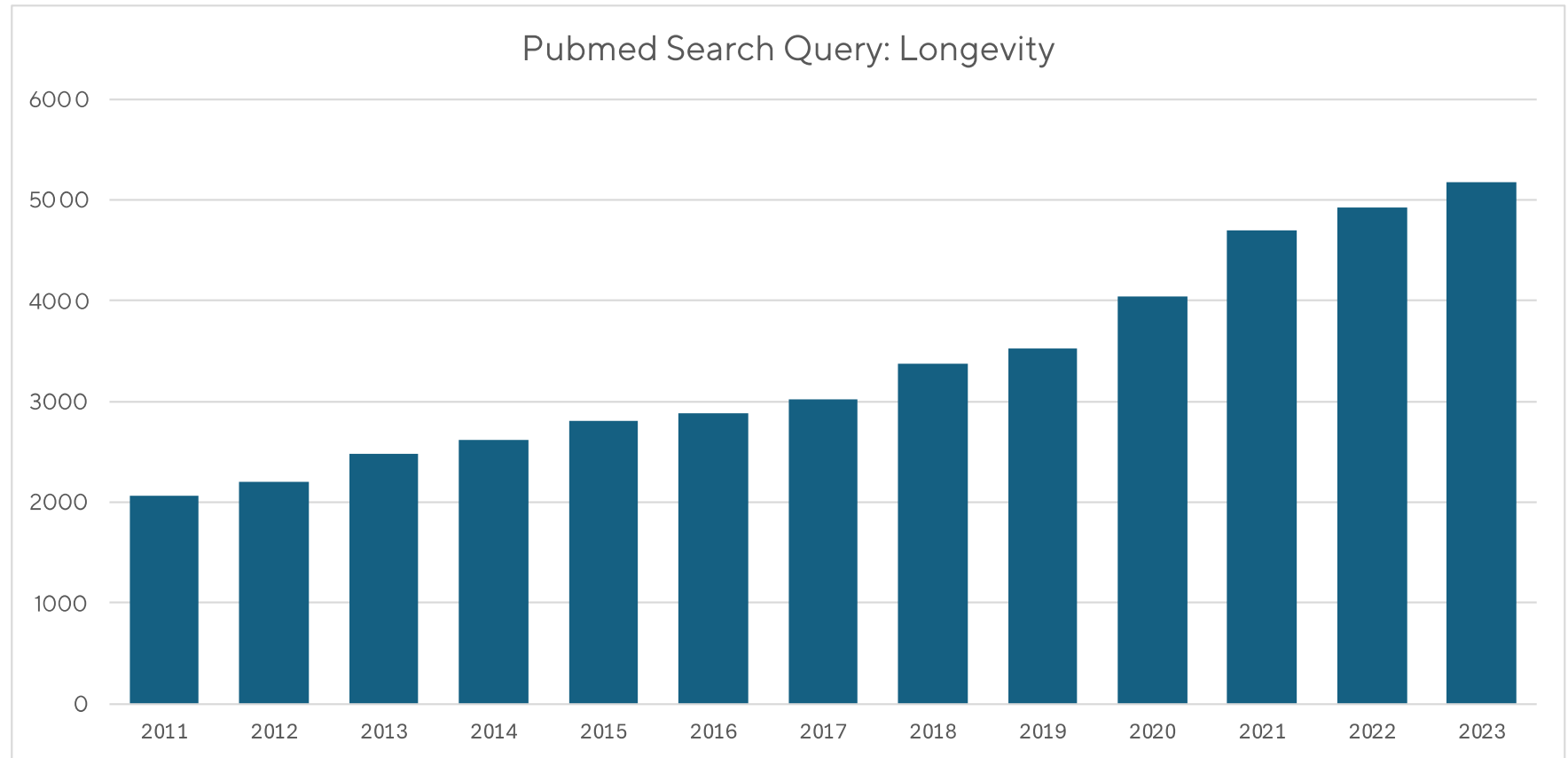
Estimated years of life expectancy at birth from 1950-1955 to 2095-2100 (projected)

More developed regions Less developed regions



Source: UN Department of Economic and Social Affairs • Created with Datawrapper

A Surge in Longevity Research Driven By Advances in Biotech, Genetics, and Personalized Medicine.



Growing Public Interest in Longevity



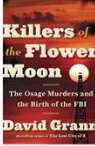
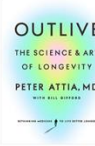

BOOKS

The New York Times Best Sellers

Authoritatively ranked lists of books sold in the United States, sorted by format and genre.

FICTION | NONFICTION | CHILDRENS | MONTHLY LISTS | October 1, 2023

Combined Print & E-Book Nonfiction >

- | | | | | |
|--|---|--|---|--|
| <p>1</p>  <p>ELON MUSK
by Walter Isaacson</p> <p>The author of "The Code Breaker" traces Musk's life and summarizes his work on electric vehicles, private space exploration and artificial intelligence.</p> <p>BUY</p> | <p>2</p>  <p>COUNTING THE COST
by Jill Duggar with Derick Dillard and Craig Borlase</p> <p>A behind-the-scenes account of the reality TV series "19 Kids and Counting" and a portrayal of life inside the Duggar family.</p> <p>BUY</p> | <p>3</p>  <p>KILLERS OF THE FLOWER MOON
by David Grann</p> <p>The story of a murder spree in 1920s Oklahoma that targeted Osage Indians, whose lands contained oil.</p> <p>BUY Read Review</p> | <p>4</p>  <p>OUTLIVE
THE SCIENCE & ART OF LONGEVITY
by Peter Attia, MD with Bill Gifford</p> <p>A look at recent scientific research on aging and longevity.</p> <p>BUY</p> | <p>5</p>  <p>THE BODY KEEPS THE SCORE
by Bessel van der Kolk</p> <p>How trauma affects the body and mind, and innovative treatments for recovery.</p> <p>BUY Read Review</p> |
|--|---|--|---|--|



Spotify The Podcast Charts English

1	TOP PODCASTS	The Joe Rogan Experience JOE ROGAN	FOLLOW SHARE
2	TOP PODCASTS	The Comments Section with Brett Cooper THE DAILY WIRE	FOLLOW SHARE
3	TOP PODCASTS	The Tucker Carlson Show TUCKER CARLSON NETWORK	FOLLOW SHARE
4	TOP PODCASTS	Shawn Ryan Show SHAWN RYAN CUMULUS PODCAST NETWORK	FOLLOW SHARE
5	TOP PODCASTS	Smosh Reads Reddit Stories SMOSH	FOLLOW SHARE
6	TOP PODCASTS	Off Duty: An NCIS Rewatch SPOTIFY STUDIOS	FOLLOW SHARE
7	TOP PODCASTS	Huberman Lab SCICOMM MEDIA	FOLLOW SHARE



A Holistic Under- standing of Longevity.

Longevity is often thought of simply as living longer when the concept of longevity actually is more encompassing and nuanced, including different important aspects:

1. **Lifespan** extension refers to increasing the number of years a person lives, aiming to push the boundaries of the maximum human lifespan through medical and lifestyle interventions.
2. Extending **Healthspan** involves delaying or preventing the onset of chronic diseases and conditions associated with aging, thereby ensuring that more of a person's life is spent in good health.
3. **Quality of Life** - the overall well-being and satisfaction experienced by individuals, including physical, mental, and social aspects.

Longevity Science Could Redefine Humanity's trajectory.

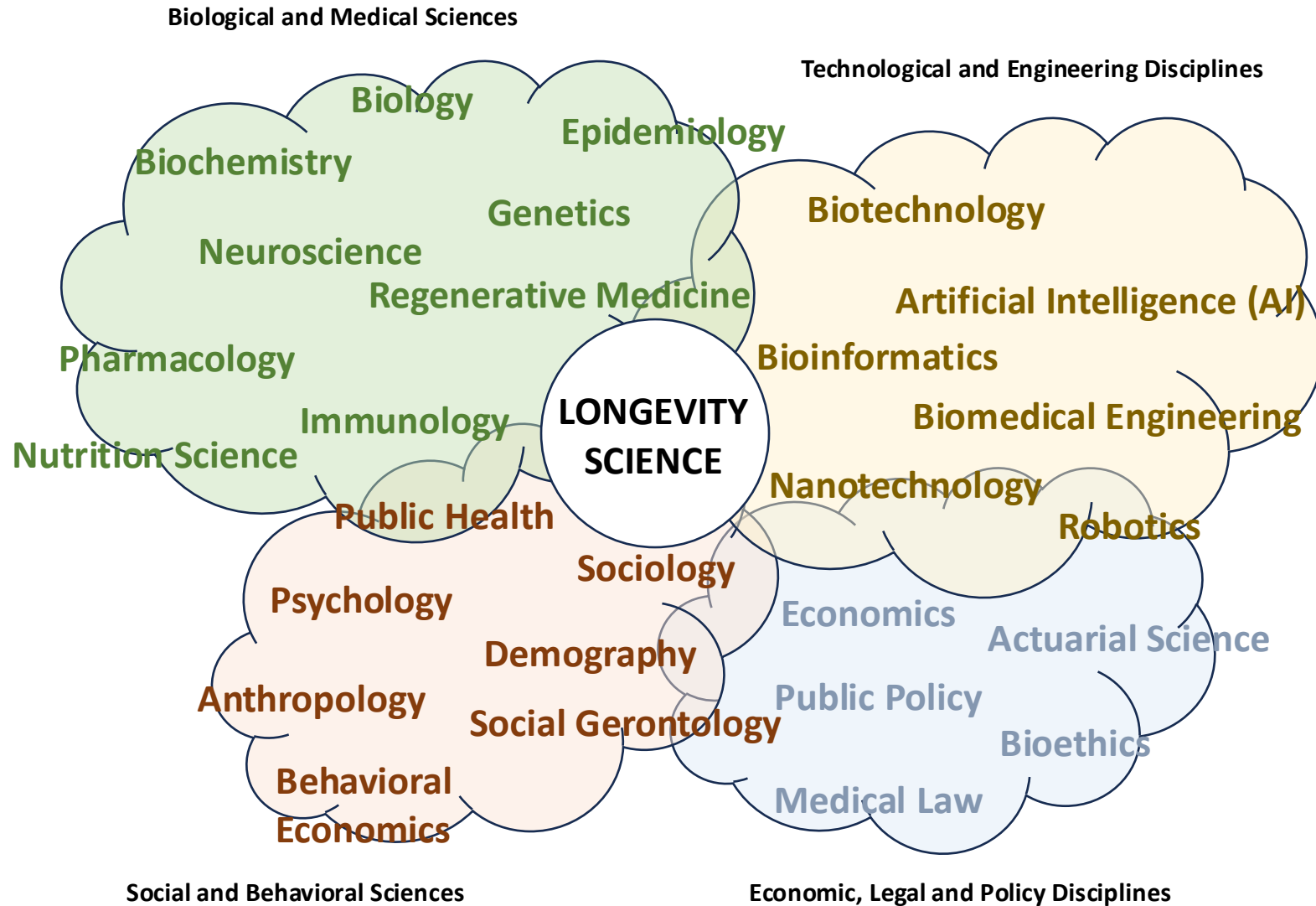
The Personal and Societal Benefits of Longevity:

- **Enhanced Family Bonding:** Increased lifespan affords us ample time to cherish moments with our relatives, fostering stronger familial connections and building enduring recollections.
- **Extended Work Engagement:** With prolonged vitality, individuals can continue their professional endeavors, utilizing their expertise and knowledge for an extended duration.
- **Economic Advancement:** A lengthier, healthy lifespan translates into more years of financial productivity, potentially boosting economic growth on a national scale.
- **Accumulation of Wealth:** Extended careers provide individuals with additional opportunities to save and invest, augmenting personal finances and bolstering financial stability.
- **Cultural and Intellectual Exchange:** Longevity encourages interactions between different generations, facilitating the sharing of ideas, values, and wisdom across diverse age demographics.
- **Active Community Participation:** With increased longevity comes the ability to actively engage in community activities, contributing to social causes and initiatives for communal progress.
- **Opportunities for Entrepreneurship:** Prolonged lifespan opens doors for latecomers to the entrepreneurial scene, allowing them more time to innovate, establish businesses, and make economic contributions.
- **Sustainable Social Welfare Systems:** Individuals who enjoy longer, productive lives contribute to social welfare programs over extended periods, ensuring the longevity and viability of these systems for future generations.
- **Extended Access to Wisdom:** Longevity affords individuals the opportunity to tap into accumulated wisdom and experience for more prolonged periods, enriching personal growth and societal knowledge.
- **Encouragement of Innovation:** With longer lifespans, there is a greater potential for fostering innovation as individuals have more time to explore ideas, take risks, and contribute fresh perspectives to various fields.

Longevity Science as an Independent Scientific Discipline.

	Scope	Goals	Approach
Longevity Science	Focuses on extending lifespan and healthspan through interdisciplinary research and innovation.	Aims to extend healthy, productive years of life.	Proactive and integrative, using advanced technologies and interdisciplinary methods.
Medicine	Concentrates on diagnosing, treating, and preventing diseases within the existing healthcare framework.	Seeks to maintain and restore health by treating diseases.	Reactive and treatment-oriented, with a focus on individual health issues.
Gerontology	Studies aging from a multidisciplinary perspective, including biological, social, and psychological aspects.	Aims to understand aging and improve the quality of life for older adults.	Research-focused, considering mostly social and psychological factors.

Mapping Out
Inter-
disciplinary
Longevity
Science.



Why is Longevity Sciences needed?

- 1. Holistic Approach:** Longevity science integrates insights from multiple fields to address aging from a broader perspective, focusing on both lifespan and healthspan.
- 2. Unified Focus on Aging:** It brings together diverse fields like biology, medicine, technology, and sociology with the common goal of understanding and improving the aging process.
- 3. Efficient Collaboration:** A dedicated field fosters collaboration across disciplines, leading to more coordinated research and innovation.
- 4. Targeted Solutions:** Longevity science develops specific interventions aimed at delaying aging, rather than addressing individual diseases separately.
- 5. Societal Impact:** It addresses the wide-reaching effects of aging on healthcare, economy, and public policy, ensuring a comprehensive response to global demographic changes.

Historical Parallels to Public Health Demonstrate Potential Impact.

- **Public health serves as a strong reference point**, being a relatively young discipline that has already made a tremendous impact on global health. Both fields are inherently interdisciplinary, drawing from diverse areas of science, medicine, and social policy.
- The growth of scientific understanding regarding the sources and control of disease in public health demonstrated how targeted interventions could significantly improve societal health. This cause-and-effect relationship between disease control and public well-being, once understood, led to its widespread acceptance as a public responsibility and in turn **to a dramatic increase in expected life expectancy**.
- Similarly, as **longevity science** advances, its insights could shape public health policy and education and encouraging proactive measures to further **increase lifespan and healthspan**.

The First
Dedicated
Longevity
Science
Curriculum



The First Institution for Higher Education in Longevity Science

Geneva College of Longevity Science

Academic Degree

Executive Master of Science in Longevity;
EMSc Longevity (GCLS)

Period of Study

2 semesters (12 Months)

Language

English

Format

Distance learning, part-time

ECTS Credits

60

Introduction to
Longevity Science

Biomedical Foundations
of Aging

Nutrition and
Longevity

Exercise Physiology
and Aging

Technological
Innovations
in Longevity

Ethics and Policy in
Longevity Science

Public Health and
Epidemiology of Aging

Social and Psychological
Dimensions of Aging

Medical Longevity
Intervention

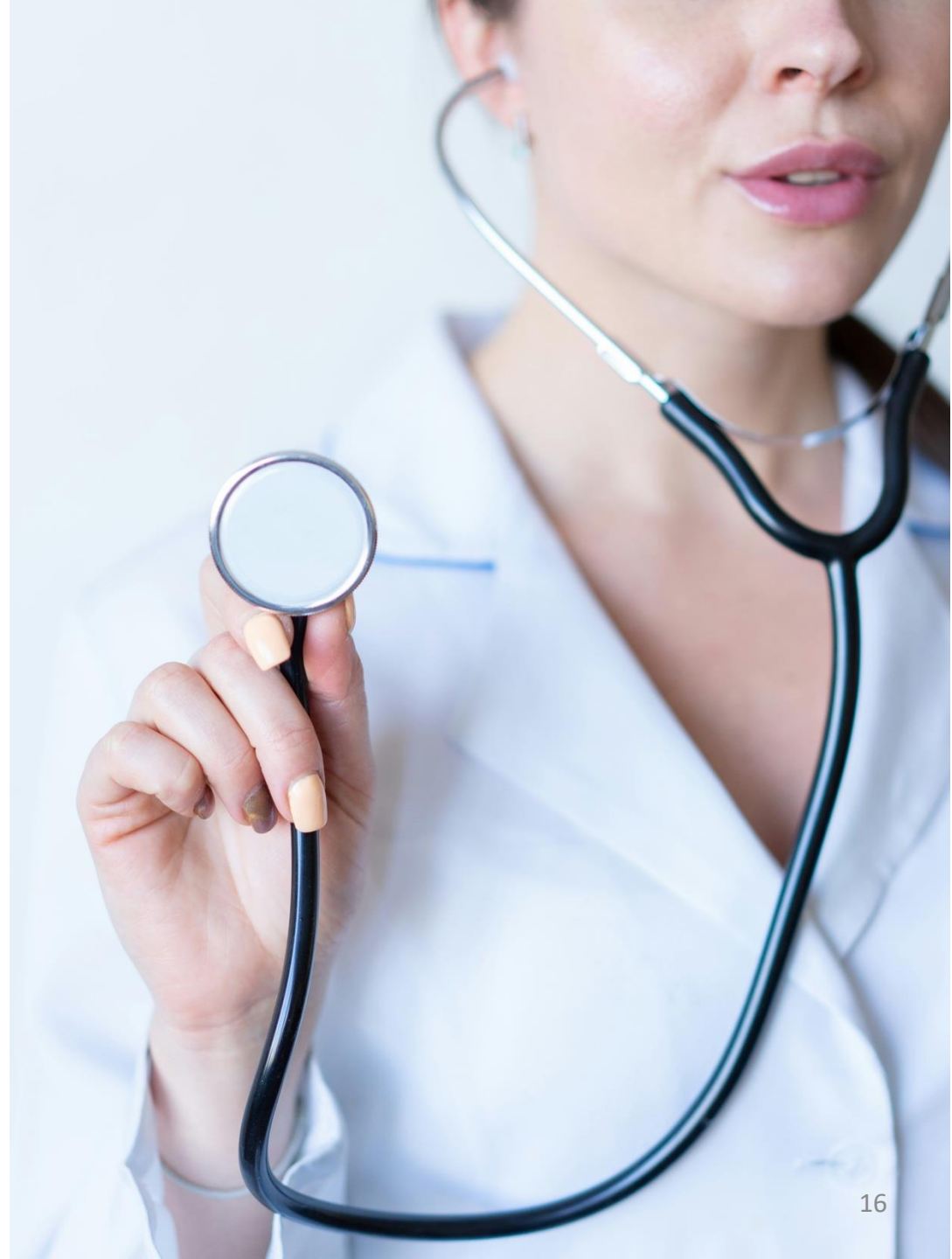
Longevity Supplements
and Compounds

Webinar Series: The Risk of Living Longer

Longevity Science – Advancing From Cure To Prevention

2. Is Prevention Really Better than a Cure?

Prevention is generally considered better than a cure, both in terms of health outcomes and financial savings. Preventing disease is generally more effective and less costly than treating it.



Why Prevention? The Example of Cardio-vascular Disease

It is estimated that for every \$1 spent on preventive health programs, up to \$6 in future healthcare costs can be saved.

The Example of Preventing Cardiovascular Disease:

Cost of Preventive Measures of high blood pressure (hypertension) :

- Annual blood pressure screening: \$10–\$50 per person
- Lifestyle intervention (e.g., weight loss, smoking cessation, exercise programs): \$200–\$500 per year
- Medication for managing high blood pressure: \$300–\$1,000 per year for generic drugs
- **Total annual prevention cost: approximately \$510–\$1,550 per person.**

Cost of Cure (Treatment after Cardiovascular Disease / Heart Attack)

- Hospitalization: \$20,000–\$40,000 (including diagnostic tests, hospital stay, and initial treatment)
- Surgery (if needed), such as coronary artery bypass surgery: \$70,000–\$200,000
- Post-surgery rehabilitation: \$1,000–\$5,000
- Long-term medications and follow-up care: \$2,000–\$10,000 per year for life
- **Total cost of a heart attack: between \$90,000 and \$250,000 for the first year of treatment.**

Age is the
Primary Risk
Factor for
Various
Diseases,
Overshadow-
ing Other
Factors in
Significance.

AGE vs. SMOKING: The presence of benzopyrene in cigarette smoke heightens the likelihood of structural disruptions in DNA strands. This increased focus on DNA repair mechanisms by epigenetic factors can lead to misregulated genes, creating an environment conducive to cancer cells. Consequently, smoking for an extended period elevates the risk of lung cancer by five times. However, reaching the age of 50 increases the cancer risk a hundredfold, and by 70, it skyrockets to a thousandfold. It is evident that age represents the most significant risk factor for diseases, necessitating our urgent attention.

AGE vs. CHOLESTEROL: Elevated cholesterol levels may amplify the risk of heart disease by up to twenty times - however, being eighty years old escalates the risk to 500 times that of someone in their twenties. Eating a plant-based diet may reduce the risk of dementia by threefold, but the difference in dementia rates between eight-five year olds and those of individuals aged sixte-five and less is three hundredfold. Adopting a plant-based diet might decrease the risk of dementia by more than 50% but staying younger seems more effective - dementia of individuals aged eighty-five is 300 times more likely than in those aged sixty-five and below.⁶

⁶ <https://pubmed.ncbi.nlm.nih.gov/32111640/>

Optimal Prevention – Addressing Biological Age.

- Should we focus fighting individual diseases or we look into something that could prevent all of them?
- Even a cure for cancer would only increase the average life expectancy in the US by 3 years, as there are other age-related diseases that will continue to affect our well-being as we grow older.
- Aging is the single greatest risk factor for many chronic diseases, including heart disease, cancer, diabetes, and Alzheimer's.
- Understand the underlying biological processes that cause aging at the cellular and molecular levels could lead to therapies that target the root causes of multiple diseases simultaneously.
- The only question that remains, is it doable? Many experts say yes. And even the WHO already implies the modifiable nature of ageing.

Webinar Series: The Risk of Living Longer

Longevity Science – Advancing From Cure To Prevention

3. What is Preventative Medicine?

By prioritizing prevention, the burden of chronic diseases can be reduced, health outcomes improved, and healthcare costs saved.



What is Preventative Medicine?

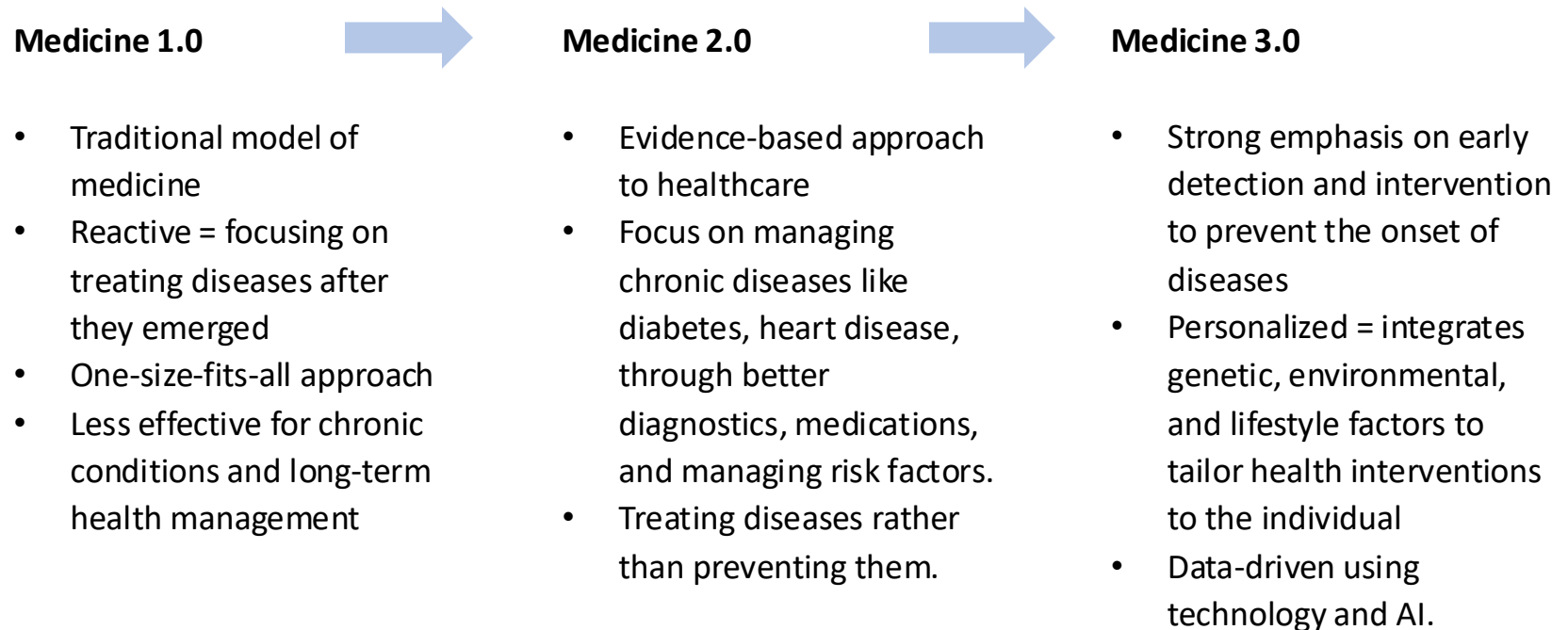
Preventive medicine is a medical practice **focused on preventing diseases, injuries, and health conditions before they occur**, rather than treating them after they have developed.

Preventive medicine includes strategies such as:

- Screening programs (e.g., mammograms, colonoscopies) to detect early signs of disease.
- Vaccination to protect against infectious diseases.
- Health education promoting healthy behaviors like regular exercise, a balanced diet, smoking cessation, and stress management.
- Behavioral interventions targeting lifestyle factors that increase disease risk (e.g., obesity, high blood pressure).
- Early intervention for individuals at high risk of developing diseases due to genetic or environmental factors.

Why is it Often Called Medicine 3.0?

The concept of Medicine 3.0 is often hailed as the next evolution of healthcare and represents a shift from treating diseases to preventing them.



Longevity Medicine as the Next Evolution After Medicine 3.0.

The concept of Longevity Medicine is a related concept but has a different focus.

- Shares a **preventative, ultra-personalized approach** using new technologies.
- But **emphasises targeting the most dominant risk factor of diseases (age)** rather than individual diseases.
- Specifically targets **extending lifespan and healthspan**, focusing on slowing or even reversing the aging process and treating age-related conditions.

Webinar Series: The Risk of Living Longer

Longevity Science – Advancing From Cure To Prevention

4. How to Foster Change?

How might healthcare systems, traditionally focused on treatment rather than prevention, transition to a prevention-first approach?



Hurdles to Taking a More Preventive Approach.

- **Financial incentives:** Healthcare systems are often rewarded for treating illness rather than preventing it.
- **Cultural resistance:** Both providers and patients are accustomed to reactive care.
- **Upfront costs:** Implementing preventive measures may require initial investment before long-term savings are realized.
- **Lack of infrastructure:** Systems may not have adequate technology or resources to track and implement preventive care.

Proposals for Changes.

- **Revised payment models:** Shift payment systems from fee-for-service to value-based care, where providers are rewarded for keeping patients healthy rather than for the volume of treatments. This incentivizes preventive care and long-term health management.
- **Education and awareness:** Both healthcare professionals and patients need education on the importance of prevention. Foster a Prevention-Oriented Culture and encourage companies - healthy employees are more productive and cost less in healthcare.
- **Policy reforms:** Government policies should incentivize preventive care, such as subsidizing screenings and wellness programs.
- **Technological investment:** Utilize data analytics and health monitoring tools to predict and prevent diseases.
- **Use data analytics and performance metrics:** Tracking health outcomes can demonstrate the cost savings and effectiveness of prevention. Track preventive care outcomes, such as reductions in chronic disease rates or hospital admissions and hold healthcare providers accountable.

Webinar Series: The Risk of Living Longer

Longevity Science – Advancing From Cure To Prevention

5. How to Encourage Wider Buy-in in Society?

Making Medicine 3.0 and Longevity Medicine more accessible.

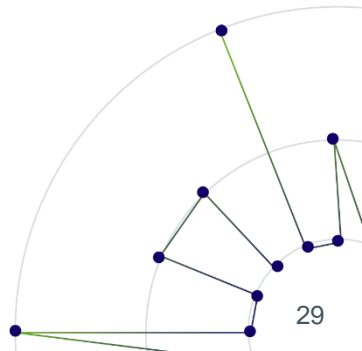


Make Longevity Medicine Affordable.

- ✓ Subsidize research and development.
- ✓ Foster global collaborations to share research and costs
- ✓ Encourage public-private partnerships.
- ✓ Speed up translation of innovations.
- ✓ Invest in preventive care to reduce future costs.
- ✓ Expand insurance coverage for longevity treatments.
- ✓ Promote generic alternatives to expensive drugs.
- ✓ Scale up production to lower prices.
- ✓ Incentivize affordable healthcare innovations.

Poll question

*“On a scale of
1 (not for me) to 5 (fantastic)
how would you rate today’s webinar?”*



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Season 2 program

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Thank you

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Mapping Out Inter- disciplinary Longevity Science.

Biological and Medical Sciences

- Biology – Understanding the cellular and molecular mechanisms of aging.
- Genetics – Study of genetic factors that influence longevity and aging.
- Biochemistry – Investigation of the biochemical processes related to aging.
- Neuroscience – Exploring the aging brain and cognitive decline.
- Regenerative Medicine – Developing therapies to repair or replace aging tissues and organs.
- Pharmacology – Researching drugs that can slow or reverse the aging process.
- Epidemiology – Studying population health trends related to aging.
- Geriatrics – Medical care and treatment for elderly populations.
- Immunology – Understanding how the immune system ages and its role in longevity.
- Nutrition Science – Investigating how diet influences lifespan and healthspan.
- Public Health – Addressing aging at a population level, focusing on prevention and wellness.

Technological and Engineering Disciplines

- Biotechnology – Developing tools and treatments to combat aging, such as gene editing and stem cells.
- Artificial Intelligence (AI) – Analyzing health data to predict aging patterns and personalize treatments.
- Bioinformatics – Using computational tools to study aging and longevity at a molecular level.
- Biomedical Engineering – Designing devices and technologies to enhance health in older adult.
- Nanotechnology – Exploring tiny interventions at the cellular level to repair age-related damage.
- Robotics – Assisting with elderly care through robots and automation.

Mapping Out Inter- disciplinary Longevity Science.

Social and Behavioral Sciences

- Sociology – Examining the societal implications of aging populations.
- Psychology – Understanding mental well-being, cognitive function, and emotional health as people age.
- Demography – Studying the age structure of populations and the impact of increasing longevity.
- Anthropology – Exploring cultural differences in aging and longevity.
- Social Gerontology – Focusing on the social aspects of aging, including retirement, caregiving etc.
- Behavioral Economics – Analyzing how people make health and financial decisions that affect longevity.

Economic, Law and Policy Disciplines

- Economics – Studying the impact of longer life on healthcare, pensions, and workforce productivity.
- Healthcare Economics – Investigating the costs needed to support aging populations.
- Actuarial Science – Assessing risks of increased longevity, especially for insurance and pension systems.
- Public Policy – Developing policies to address the needs of aging societies.
- Labor Economics – Analyzing how an aging workforce affects employment.
- Bioethics – Addressing ethical concerns around life extension, resource allocation, and end-of-life care.
- Medical Law – Navigating legal issues related to healthcare access and the use of new technologies.
- Social Welfare – Examining how social safety nets are adapted for aging populations.