

Update: Prospects for an Improved Healthspan and Lifespan

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Healthspan and Lifespan Extension: Progress Update, Clinical Medical Practice Reforms

Recent research and publications on the characteristic diseases of aging, reported here in previous years, have resulted in new therapies/treatments entering clinical practice, first through higher cost concierge medical practices, but now becoming more widely accessible through publications and services marketed to individuals who are motivated to take a larger role in the diagnosis and treatment of their health issues.

New Clinical Medical Practice, Individualized or Functional Medicine

Individualized medicine is spreading rapidly. First offered by specialized clinics to meet the needs of patients not helped by conventional medicine, Functional Medicine practitioners seek to identify the underlying chemical/biological causes of symptoms in each individual. The practice is now spreading rapidly, propelled by:

- low cost computer-based tools to access growing databases of research and clinical publications and databases to assist in medical diagnoses and formulating treatment plans,**
- empowerment of additional classes of less costly medical practitioners, including Nurse Practitioners and Physician's Assistant,**
- incorporation of additional health practitioners in individualized treatment plans, including dietitians, genetic counselors, physical therapists, and stress management counselors,**

New Clinical Medical Practice, Individualized or Functional Medicine, continued

- publication of Best Seller books on individualized medicine authored by experienced medical doctors (research and clinic), particularly those advocating optimization of healthspan.
Prominent recent examples:
 - **The End of Alzheimer's** (2017) and **The End of Alzheimer's Program** (2020) by Dale E Bredesen, MD, was discussed in reports for previous years.
 - **Outlive: The Science & Art of Longevity** (2023) by Peter Attia, MD focuses on our ill health predicament (ancient genes + modern diet = chronic illness), personal goal setting, exercise and movement, individualized nutrition, sleep, and emotional health. Peter shares his life experiences with the roller coaster of physical and mental health. Peter Attia's thoughts on Metabolic Syndrome were discussed in my 2024 report.
 - **Young Forever** (2023) by Mark Hyman, MD covers how and why we age, the adverse effects of too much and too little (food, activity, stress, etc.), optimizing healthspan and lifespan, and a program (Young Forever Program) which is individualized for each individual through testing, diet, supplements, lifestyle practices. "food as medicine and medicine as food"

***Young Forever* by Mark Hyman, MD**

- **This is the best introduction I've found to navigating the complex voyage of maintaining/improving your general health as you rack up additional years**
- **Descriptions from the website youngforeverbook.com:**
 - **“Dr. Mark Hyman challenges us to reimagine our biology, health, and the process of aging. With dozens of tips, *Young Forever* is a revolutionary, practical guide to creating and sustaining health—for life.”**
 - **“Mark Hyman, MD, is the Senior Advisor for the Cleveland Clinic Center for Functional Medicine, and founder and director of The UltraWellness Center. He is the bestselling author of numerous books, including *The Pegan Diet*, *Food: What the Heck Should I Eat?*, *Eat Fat, Get Thin*, and *The Blood Sugar Solution 10-Day Detox Diet*.”**
- **Dr Hyman's podcast video introducing the book, 2023, 19m18s:**
<https://www.youtube.com/watch?v=xr4Wx67pQww>

What's In the Book?

PART I

HOW AND WHY WE AGE

- 1 The Quest for the Fountain of Youth: Is Immortality Possible?
- 2 The Root Causes of Aging
- 3 Biological versus Chronological Age
- 4 The Ten Hallmarks of Aging
- 5 Dying of Too Much or Too Little: Why Balance Matters

PART II

OPTIMIZING YOUR HEALTH SPAN AND LIFE SPAN

- 6 Foundations of Longevity: Balancing Your Seven Core Biological Systems
- 7 Eating for Longevity
- 8 Moving for Longevity
- 9 Optimizing Your Lifestyle for Longevity: Beyond Diet and Exercise
- 10 Hormesis: Activating Healing and Repair Mechanisms
- 11 Advanced Longevity Innovations

1. Addressing The Root Causes of Aging

Aging is the greatest risk factor for many age-associated diseases, so aging itself may be the ideal target to treat all these conditions. Scientists have identified 10 cell-level changes, the Hallmarks of Aging

(discussed in my previous presentations), which tend to go wrong with increasing chronological age. Research on the Hallmarks has demonstrated associations, including causation, among the 10, so treating just a few hallmarks may address aging itself. This program has advanced quite far as epigenetic reprogramming or restoration in mice and other lab animals. Other Hallmarks are addressable by changes in lifestyle (diet and activity) to bring us into better alignment with our genetic heritage.

2. Balancing the 7 Core Biological Systems

1. Assimilation of Nutrients, including the gut microbiome,
2. Defense and Repair (immune system, inflammation),
3. Cellular Energy (mitochondria),
4. Elimination (transforming toxins and removing waste),
5. Communication (signaling molecules in circulation),
6. Transport by blood and lymph through vessel networks, and
7. Structure, including muscles, bones, and cell membranes.

Prescriptions include altered eating, supplements, movements, other physical therapies, mental health practices, sleep, and developing meaning/purpose.

What's In the Book?

PART III

THE YOUNG FOREVER PROGRAM

- 12 The Young Forever Program: Overview
- 13 The Young Forever Program: Testing
- 14 The Young Forever Longevity Diet: Food as Medicine
- 15 The Young Forever Supplements for Longevity
- 16 The Young Forever Lifestyle Practices: How to Exercise, De-Stress, Sleep, Find Your Purpose, and Activate Hormesis
- 17 The Young Forever Plan to Optimize Your Seven Core Biological Systems
- 18 Dr. Hyman's Young Forever Program: Putting It All Together

Afterword: The Perils and Promise of Our Time

Acknowledgments

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3. The Young Forever Program

Dr. Hyman's prescription for living long and well is to focus on healthspan rather than lifespan. The methods focus on managing/resolving chronic illnesses now associated with aging and thereby slowing or

reversing biological ageing.

The Program starts with questionnaires/quizzes for each of the Core Biological Systems and a panel of lab tests to determine a baseline status score (Chapt. 13). Depending on scores other tests may be required to define a baseline. Consider tests for biological age such as DNA methylation and advanced cancer screening via liquid biopsies or a full body MRI. Consider obtaining a quantified self biometric device such as an Apple Watch or a continuous blood glucose monitor. Then start a longevity diet as described in Chapt. 14. Add supplements for longevity as described in Chapt. 15. Consider adding lifestyle practices described in Chapt.16. Explore advanced longevity practices such as hot and/or cold therapy, hyperbaric oxygen, hypoxia, ozone therapies, peptides, exosomes, and red-infrared light therapy.

Chapter 17 provides detailed guidance for balancing your Core Biological Systems. Start with the assimilation and immune systems, as imbalances here often cause problems in other Core Systems. Support of a Functional Medicine professional may be required, but a self-directed approach may be adequate for other Systems.

The Best Exercise Approach to Lowering Blood Pressure

Meet two highly qualified health commentators I recommend on Youtube: Nic Verhoeven, PhD Molecular Physiology, broadcasting *Physionic*, and Gil Carvalho, MD and PhD(Caltech), broadcasting *Nutrition Made Simple*.

Physionic episode “The Best Exercise for Lowering Blood Pressure”, 2025, 7m34s:

https://www.youtube.com/watch?v=SDR_B3Lwg3Q&t=59s

More Information

Functional Medicine Personalized, Dr. Mark Hyman

- <https://drhyman.com/>
- <https://www.functionhealth.com/>
- <https://youngforeverbook.com/>
- <https://www.ultrawellnesscenter.com/>
- <https://my.clevelandclinic.org/departments/functional-medicine>

I'm Currently Reading

- *Longevity Guidebook* by Peter H Diamandis, MD, 2025

Preventative Medicine Personalized

- peterattiamd.com

Human Behavior, Processed Food Rich Diet, Fructose, Uric acid, Chronic Disease

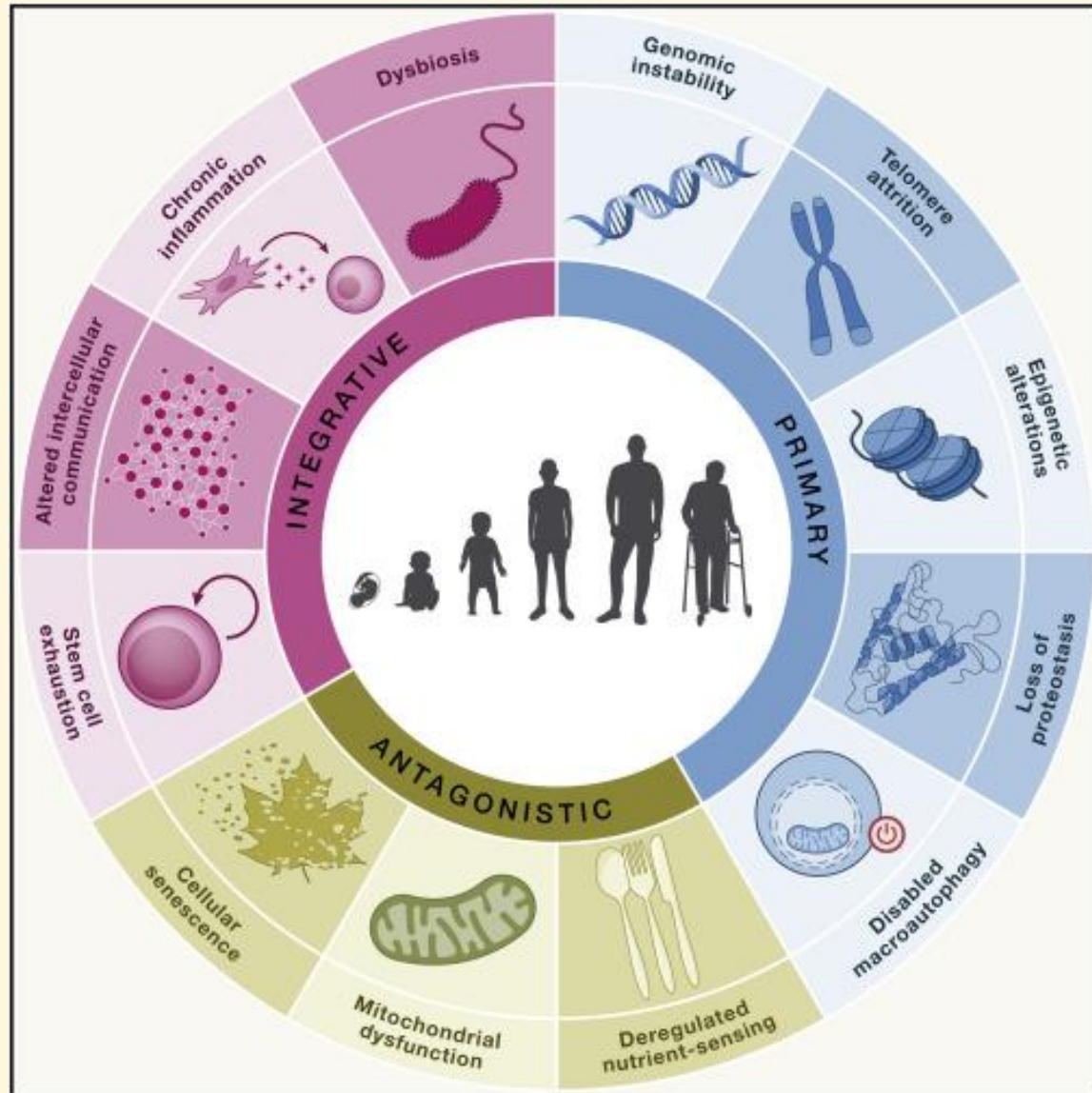
- <https://robertlustig.com/>
- <https://drrichardjohnson.com/>

Ongoing Sources of Information on Aging Science, Engineering, and Medicine

- <https://longevity.technology/> for news of new ventures and relevant research
- <https://www.lifespan.io/> for aging research news
- *Physionic* and *FoundMyFitness* channels on Youtube

What is Aging?: Its 12 Hallmarks

Cell-Level changes associated with aging, or “common denominators of aging” in mammals.



The Hallmarks of Aging, Carlos López-Otín, Maria A. Blasco, Linda Partridge, Manuel Serrano, Guido Kroemer, *Cell*, Vol 153, 2013.

Hallmarks of aging: An expanding universe, same authors, *Cell*, Vol 186, 2023.