International Perspectives on
GEROSCIENCE
Meetings 2019 — sponsored by the —
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Singapore: Sept 25-26, Singapore
Chile: Nov 18-21, Puerto Varas

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NATHAN SHOCK CENTERS OF EXCELLENCE IN THE BASIC BIOLOGY OF AGING

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afar american federation for aging research

For more information, please visit:
nathanshockcenters.org/international-perspectives-on-geroscience-meetings

GEROSCIENCE RESOURCES

Geroscience: linking aging to chronic disease.
Kennedy BK. et al. *Cell* 159:709-713
www.ncbi.nlm.nih.gov/pubmed/25417146

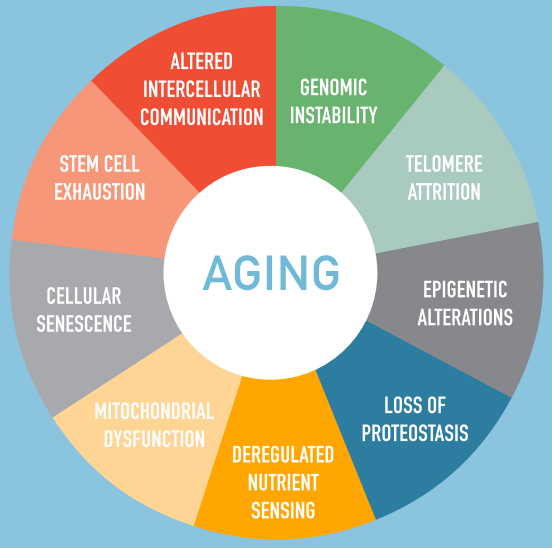
Journal of Gerontology | SPECIAL ISSUE – MOVING GEROSCIENCE INTO UNCHARTED WATERS
www.academic.oup.com/biomedgerontology/issue/71/11

Public Policy and Aging Report | SPECIAL ISSUE – THE LONGEVITY DIVIDEND: GEROSCIENCE MEETS GEROPOLITICS
www.geron.org/images/fall2013ppar.pdf

JAMA VIEWPOINTS on Aging; Cell Senescence, and Chronic Disease; Emerging Therapeutic Strategies; Aging as a biological target for prevention and therapy; and From lifespan to healthspan
www.jamanetwork.com/journals/jama/article-abstract/2703113
www.jamanetwork.com/journals/jama/article-abstract/2703112
www.jamanetwork.com/journals/jama/article-abstract/2703114

For more **Critical Literature on Geroscience** visit:
www.nathanshockcenters.org/critical-literature-in-geroscience

IF WE COULD SIMULTANEOUSLY RESEARCH AND TREAT AGING AND AGE-RELATED DISEASE, WE CAN STAY HEALTHIER LONGER AS WE GROW OLDER.



Basic research and clinical trials addressing individual diseases have led to increases in life expectancy or lifespan. However, this has not always been accompanied by a parallel increase in **healthspan**, the portion of life spent in good health.

Scientists now have a good grasp of a handful of "pillars" or **"hallmarks" of aging**, such as inflammation, stress response, and epigenetics, which drive the physical symptoms and appearance of the frailties of aging. This in turn has allowed the recent development of promising pharmacological therapies such as rapamycin, senolytics, and NAD precursors, as well as dietary approaches that take into account circadian rhythms, to target these frailties.

Aging itself is by far the greatest risk factor for most of the chronic diseases and disabilities which affect older adults.

Despite our understanding that the biology of aging drives these diseases, financial and strategic support for aging research has traditionally separated the biology of aging from age-related disease.

GEROSCIENCE

Connecting the Biology of Aging and the Biology of Disease

afar american federation for aging research

GEROSCIENCE

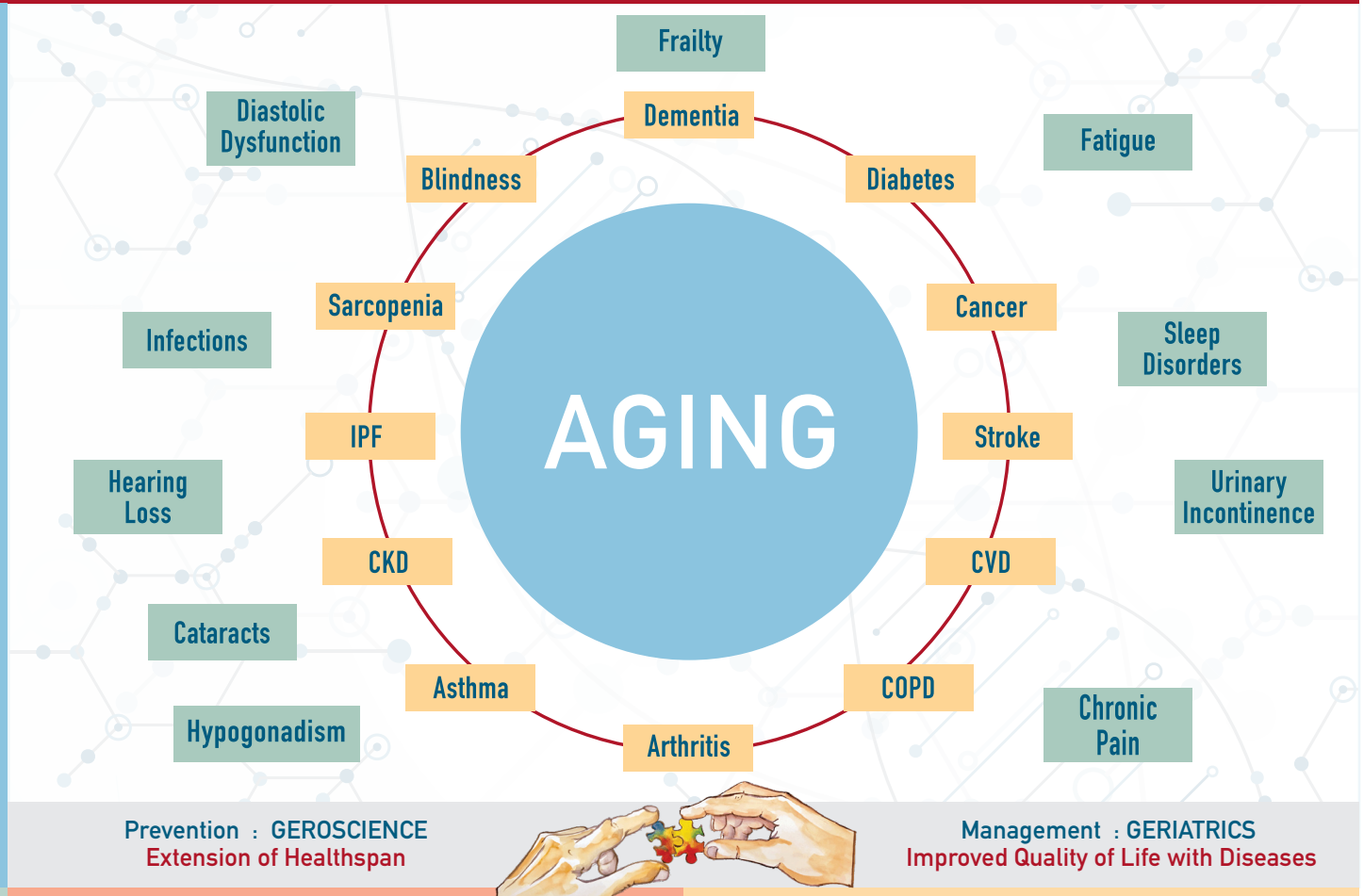
A REVOLUTIONARY APPROACH TO HEALTHY AGING
by addressing the biology of aging and age-related disease, together

The Geroscience **hypothesis** posits that since aging physiology plays a major role in many — if not all — chronic diseases, therapeutically addressing aging physiology directly will prevent the onset or mitigate the severity of multiple chronic diseases.

The **aims** of Geroscience are to understand how aging enables diseases and to exploit that knowledge to slow the appearance and progression of age-related diseases and disabilities.

The **value** of the Geroscience approach lies on the well-established fact that older adults rarely suffer from a single disease but are rather afflicted by multimorbidity. Since aging biology is the main driver of disease susceptibility, **by reducing the rate of aging, it will be possible to delay the onset of multiple diseases at once.**

The main **goal** is to **develop interventions,** which are feasible, practical, and safe, to delay the appearance of multiple chronic diseases and conditions. Interventions that slow the aging process would dramatically **lower health care costs,** perhaps more than the cure of any one single disease, while significantly **improving quality of life.**



Economic Impact

- Geroscience research could be funded through a budget representing between **0.05 and 0.1% of the current spending in Medicare,** or between $250-500M/year.
- By extending years of health as we grow older, Geroscience can **save trillions in healthcare costs.**
- Funding geroscience research is funding disease-specific research: a **two-for-one** approach.
- Individuals living healthier for longer can contribute to the **workforce longer.**

Policy Considerations

- Geroscience **transforms the "one disease at a time model"** that remains the current approach to biomedical research, most recently illustrated by the Cancer Moonshot and congressional funding for Alzheimer's Disease. Counterintuitively, this approach has played a role in the current increase in multimorbidity and decrease in health among the elderly.
- Research on aging biology is not as robustly developed as research on specific diseases. In addition to more funding, a **detailed plan** akin to the Alzheimer's Disease NAPA needs to be developed for geroscience. This will require consultation with multiple constituents.

Philanthropic Opportunities

- Create a **funding consortium** to support basic and applied academic research in geroscience, especially for early innovators entering the field.
- Create a **biotech incubator** to provide small companies with seed money as well as professional, scientific, and entrepreneurial advice.
- Fund **innovative clinical trials** such as TAME (Targeting Aging with Metformin) whose disruptive, innovative nature may seem too risky to traditional or federal funders.
- Create a **Geroscience-focused foundation** that would leverage initial investments to produce sufficient patents and sustain long-term activities.