



Steven N. Austad
S. Jay Olshansky
December 12, 2002

“How would you assess current aging research, and the prospects for significant breakthroughs in any of its major branches?”

Can we justify efforts to slow the rate of aging in humans, and if the answer is yes, how should we do so?

BEYOND THERAPY
Biotechnology and the Pursuit of Happiness

PRE-PUBLICATION VERSION
A Report of the President's Council on Bioethics

Can we justify efforts to slow the rate of aging in humans, and if the answer is yes, how should we do so?

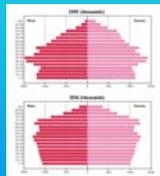


YES!!!!

“The science of aging has the potential to produce what we refer to as a “Longevity Dividend” in the form of social, economic, and health bonuses for individuals and populations – a dividend that would begin with generations currently alive and continue for all that follow.”

The rationale for pursuing the “Longevity Dividend” is already in place

The current medical model will not work in the long run



The demographic imperative

We already spend vast sums of money saving and extending lives



The value of life



Peter Laslett

The Current Medical Model

Cardiovascular Diseases

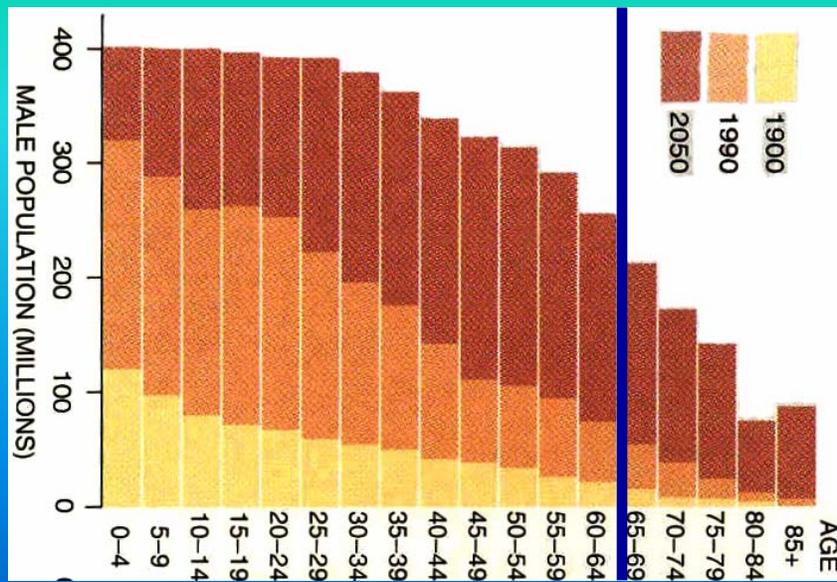
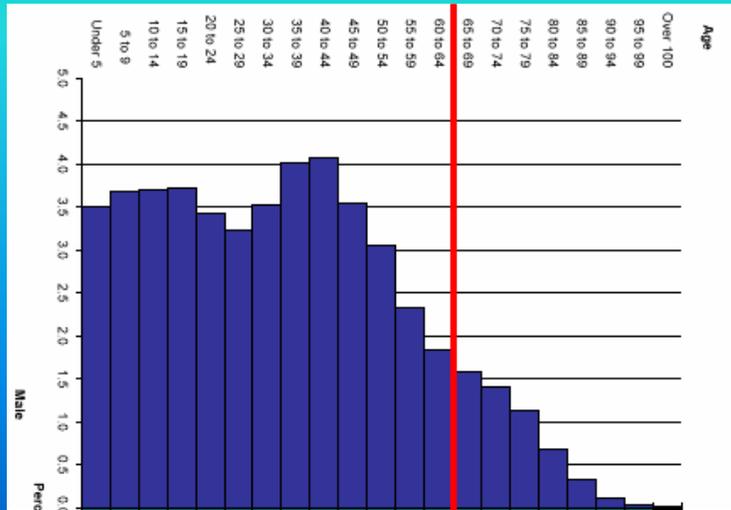
Cancer

Stroke

Infectious Diseases

Aging

United States, 2000 [males]



We already spend considerable resources on extending life and postponing death at every age

Immunizations

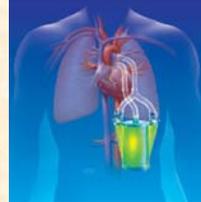


Mechanical Devices

Iron Lung



Mechanical Lung

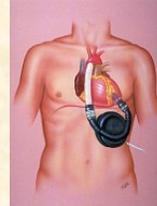


Artificial Kidney: 1947

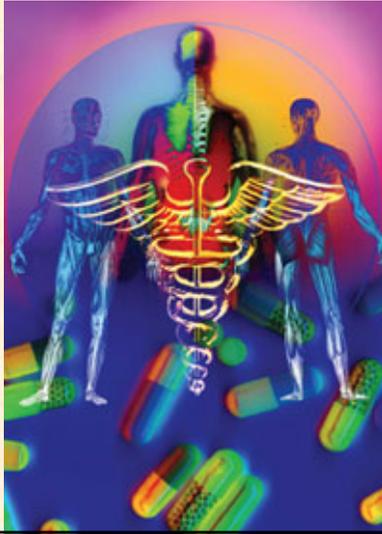
Artificial knee and hip



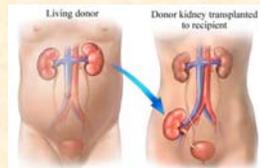
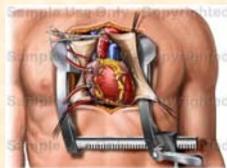
Mechanical Heart



Pharmaceutical Industry



Surgical Procedures



Early Detection of Disease



TomoTherapy is the first system to integrate CT imaging and Intensity Modulated Radiation Therapy into the same treatment machine.



The Value of Life at Every Age

Children



Young Adults



Elderly



**By slowing aging we will do what
no drug, surgical procedure, or
behavior modification can ever
do – extend your years of
youthful vigor and
simultaneously postpone all the
costly, disabling, and lethal
conditions expressed at later
ages.**

The operative word to remember is.....

Delay

Delay

Delay

Efforts to delay aging should not be based on a search for the Fountain of Youth



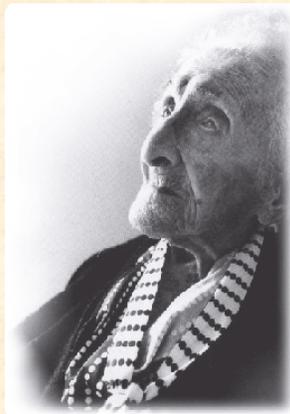
Efforts to delay aging should not be based on the transformation of older persons into a younger version of themselves



Efforts to delay aging should not promote the idea that aging can be stopped or reversed



Efforts to delay aging should not have as a goal the dramatic extension of the duration of life



Jeanne Calment: 1875-1997

Pursuing Health Extension

Improvement in public health



Extension of the period of youthful health and vigor

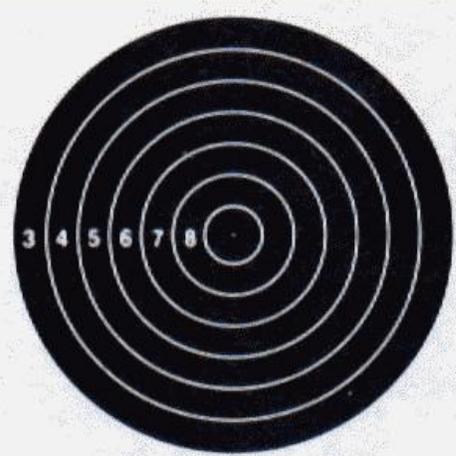


Reductions in frailty and disability at all ages

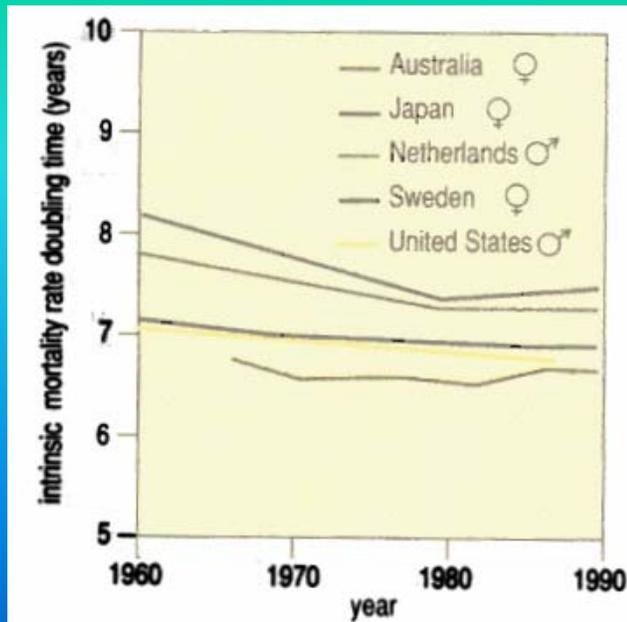


If we succeed in delaying aging, the bonuses will likely be an extension of life and dramatic reductions in health care costs.

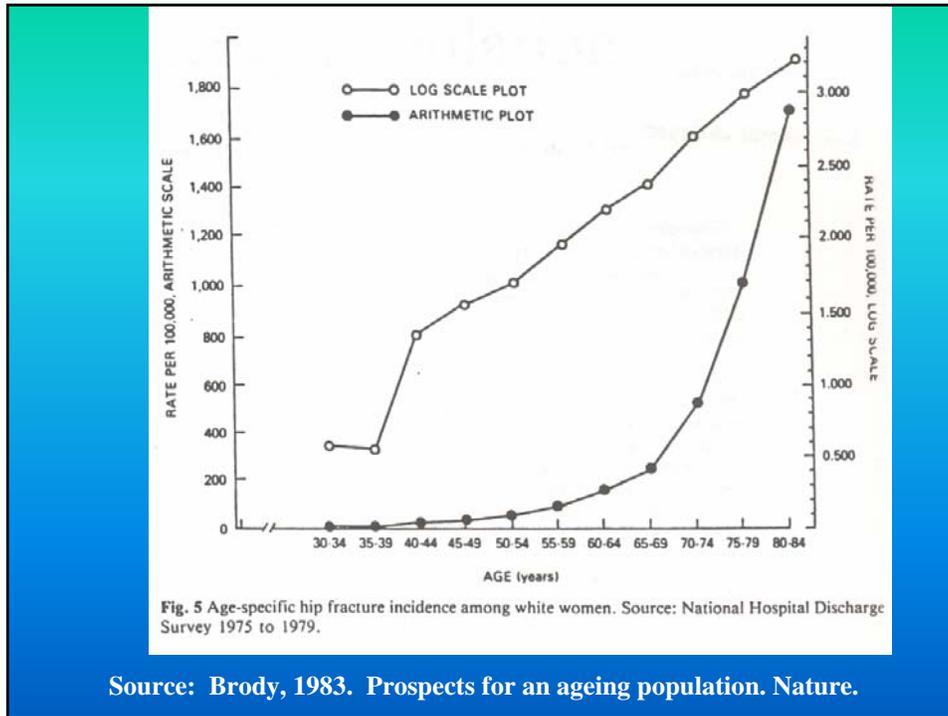
THE TARGET



7-year delay in aging



Source: Olshansky, Carnes and Grahn, 1998. Confronting the Boundaries of Human Longevity. American Scientist.



Longevity Dividend

Compression of mortality and morbidity

Reduction in age-specific risk of all diseases

Reduction in health care costs

Increased individual and national wealth

Benefits will occur for the lifespan and across generations

Health and economic benefits will exceed the elimination of cancer or heart disease

