

National Institute on Aging Programs, Goals and Strategic Planning

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Research**

National Institute of Aging, NIH

**The Future of Ageing Research in Europe
Brussels, Belgium, February 2, 2009**

OUTLINE

- **NIA – mission; history; organizational structure; budget; functioning; strategic planning**
- **Res. Divisions, incl. Neuroscience, Geriatrics; Behavioral and Social Research (BSR); Biology**
- **BSR initiatives; funding mechanisms incl. types of grants; how initiatives developed**
- **Quadrennial reviews set directions; Nat. Acad. Sci.; data infrastructure; centers; int research**

Closing Thoughts

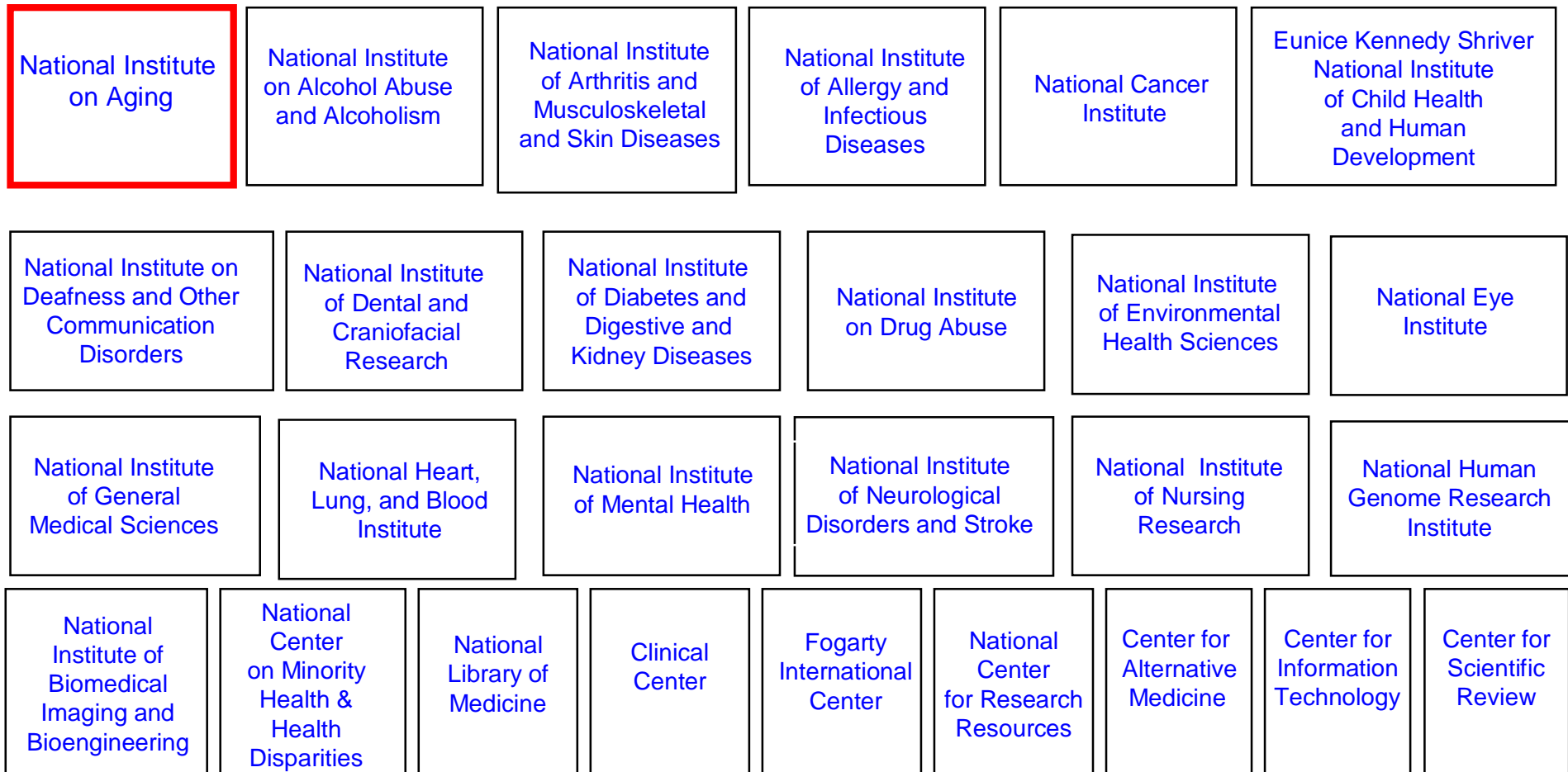
- **NIA (and BSR) unique in disciplinary range supported**
- **Thus permitting multi-& interdisciplinary research**
- **Problem too big for single country approach -- internat. collaboration and coordination needed –comparative research essential for some questions**
- **Need portfolio of mechanisms, some long-term**

Closing Thoughts

- **Without data such as SHARE –“lamp-post” Science**
- **Infrastructure such as SHARE and Centers need 10-15 year plans –we fund 40+ longitudinal studies**
- **Research directions too fluid and volatile for 5 year plans – need annual re-evaluation based on seminal findings -- also top down or bottom up?**
- **Scientific aging research community fragmented by discipline, institution, country, and continent**
- **Establish an NIA-equivalent plus e.g. RAND and NBER Summer Institutes to integrate ideas and scientists**

National Institutes of Health

Office of the Director



2008

NIA Mission

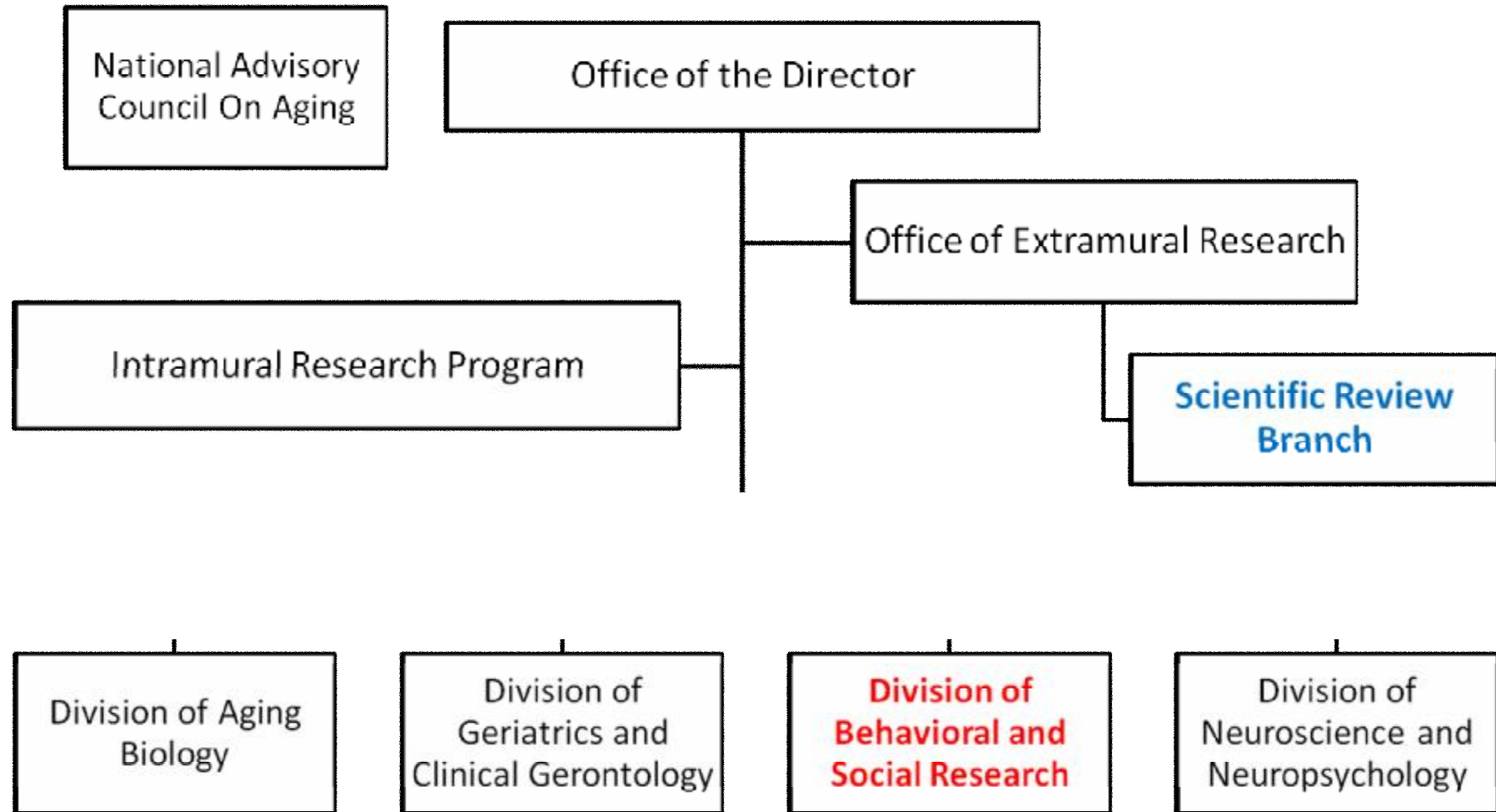
Established in 1974, NIA's mission is to improve the health and well-being of older Americans

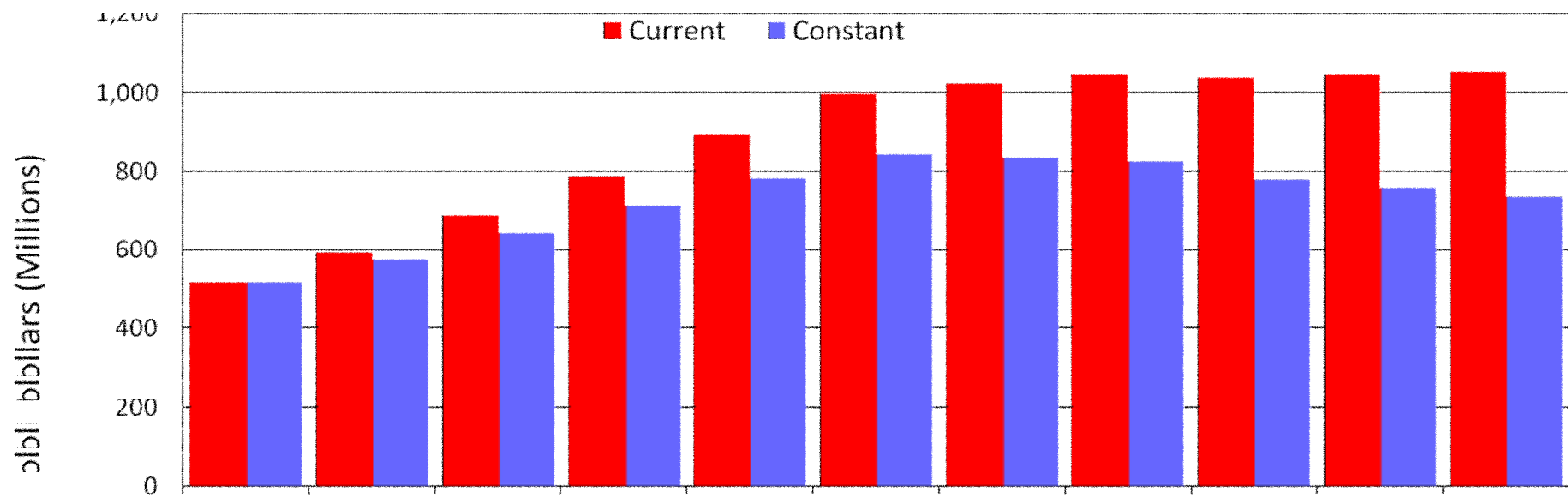
- Support and conduct high-quality research on:
 - Aging processes
 - Age-related diseases
 - Special problems and needs of the aged
- Train and develop research scientists
- Develop and maintain state-of-the-art resources to accelerate research progress

While NIA “leads” aging research

- Other NIH Institutes e.g. Cancer, Neurology and Heart fund disease-specific research very relevant to older people
- Several Foundations fund aging research and training e.g. Ellison, Hartford

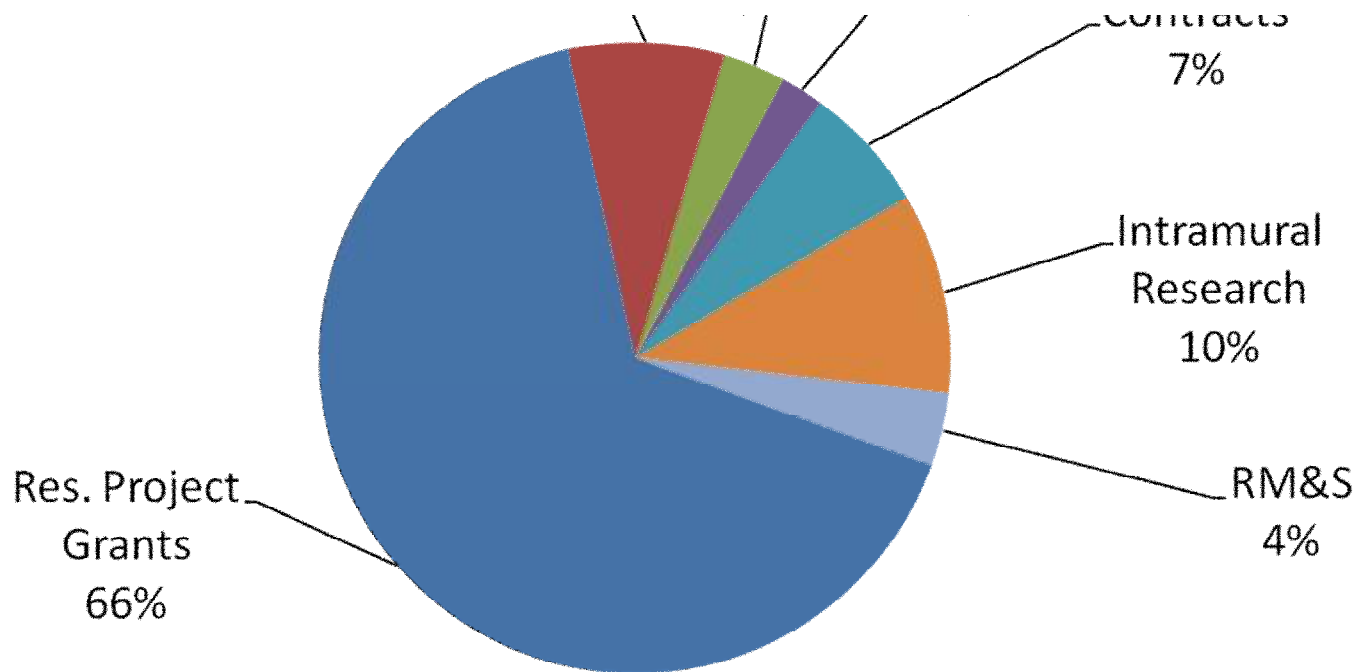
National Institute of Aging



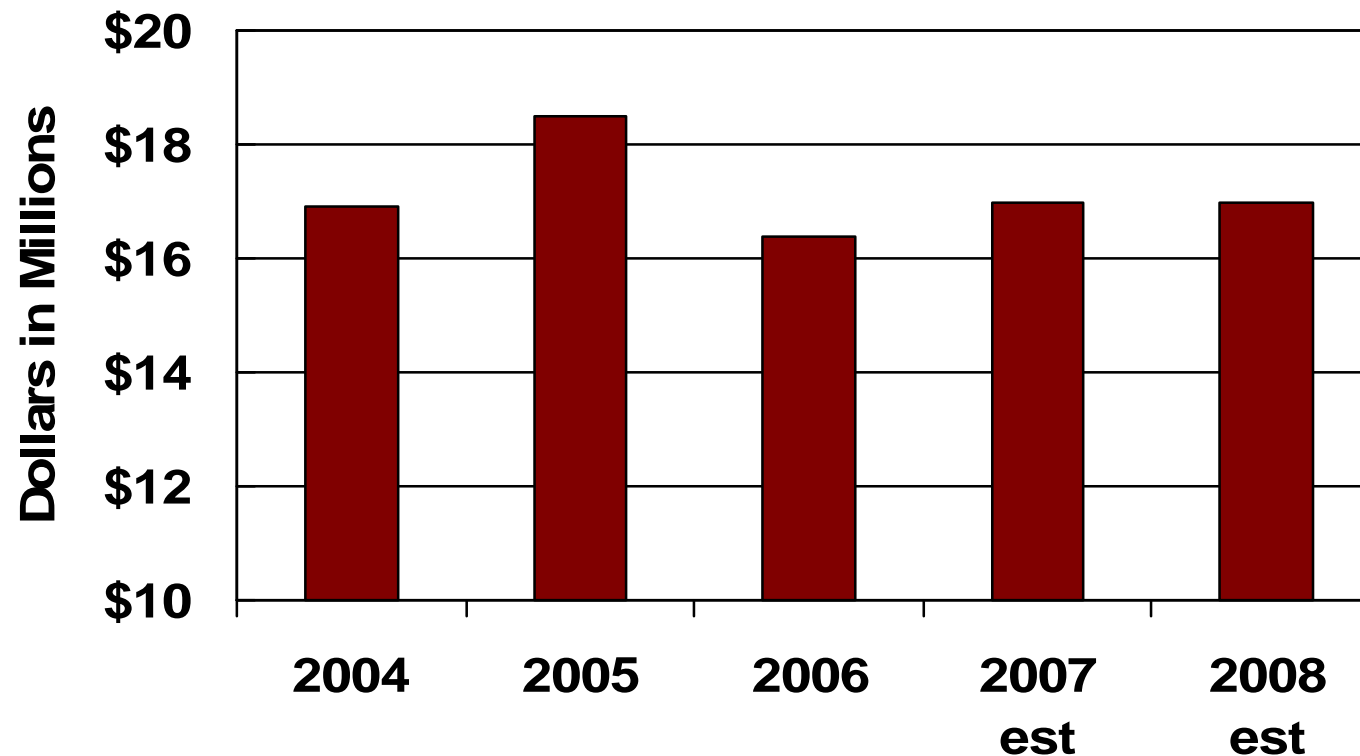


Distribution of Obligations by Category Fiscal Year 2008

Total Funding Level \$1.051 Million



NIA Research Funding Dollars to Foreign Sites



Mechanisms: Contracts, interagency agreements, extramural grants (R01s, R21s, R37s, and U01s, P01s, and P50s with U.S. affiliation)

How Do We Develop Our Program?

- Strategic Plan –useful but rarely consulted
- Workshops
- National Academy of Science (NAS) Panels
- Broad standing initiatives allowing unsolicited applications –Program Announcements
- Selected new initiatives with **set-aside funding**
- Congressional language mandating programs

NIA's Strategic Plan

- How do we develop it
- Does it have any impact?
- Does anyone look at it once it has been developed and published?

www.nia.nih.gov/AboutNIA/StrategicDirections

NIA Research Goal C – Part 1

Improve our understanding of and development interventions to prevent and treat Alzheimer's disease, other dementias of aging, and the aging brain.

- Develop better ways of distinguishing people with normal brain aging from those who will develop mild cognitive impairment (MCI), AD, and related conditions.

Develop drug and behavioral interventions for treating these diseases, preventing their onset and progression, and maintaining cognitive, emotional, sensory, and motor health.

NIA Research Goal D

Improve our understanding of the consequences of an aging society and provide that information to inform intervention development and policy decisions.

- Understand how population aging and changes in social, economic, and demographic characteristics of cohorts reaching old age affect health and well-being.
- Understand how social and economic factors throughout the lifespan affect health and well-being at older ages.

Research Mechanisms

- **Contracts versus Grants**
- **Types of grants:**
 - § **Center Grants**
 - § **Research Grants – e.g. Regular R01 and Program Projects, Small Grants, Meeting Grants, etc.**
 - § **Training and Career Development mechanisms**
 - § **(grants usually 2-5 years – some last 10-30**

In behavioral science, returns higher for Program Projects than single projects

- **Articles in top medical and general science journals:**
 - **2.68 times more effective per \$ than R01s**
- **BSR Scientific Advances**
 - **2.33 times more effective per \$ than R01s**

Grant Application Process

- **Two types of funding opportunities:**
 1. **Program announcements that are more general and announce opportunities that last for 3 years and are funded out of general funds competing with each other**
 2. **Requests for applications that are much more focused, have separate pots of money, and a special review group**
- **6-9 Months from application to award**
- **Used to be 25 pages, going down to 12**
- **Peer Review**
- **Council Approval**
- **Funded by Percentiles**

Current Funding Announcements with set-asides

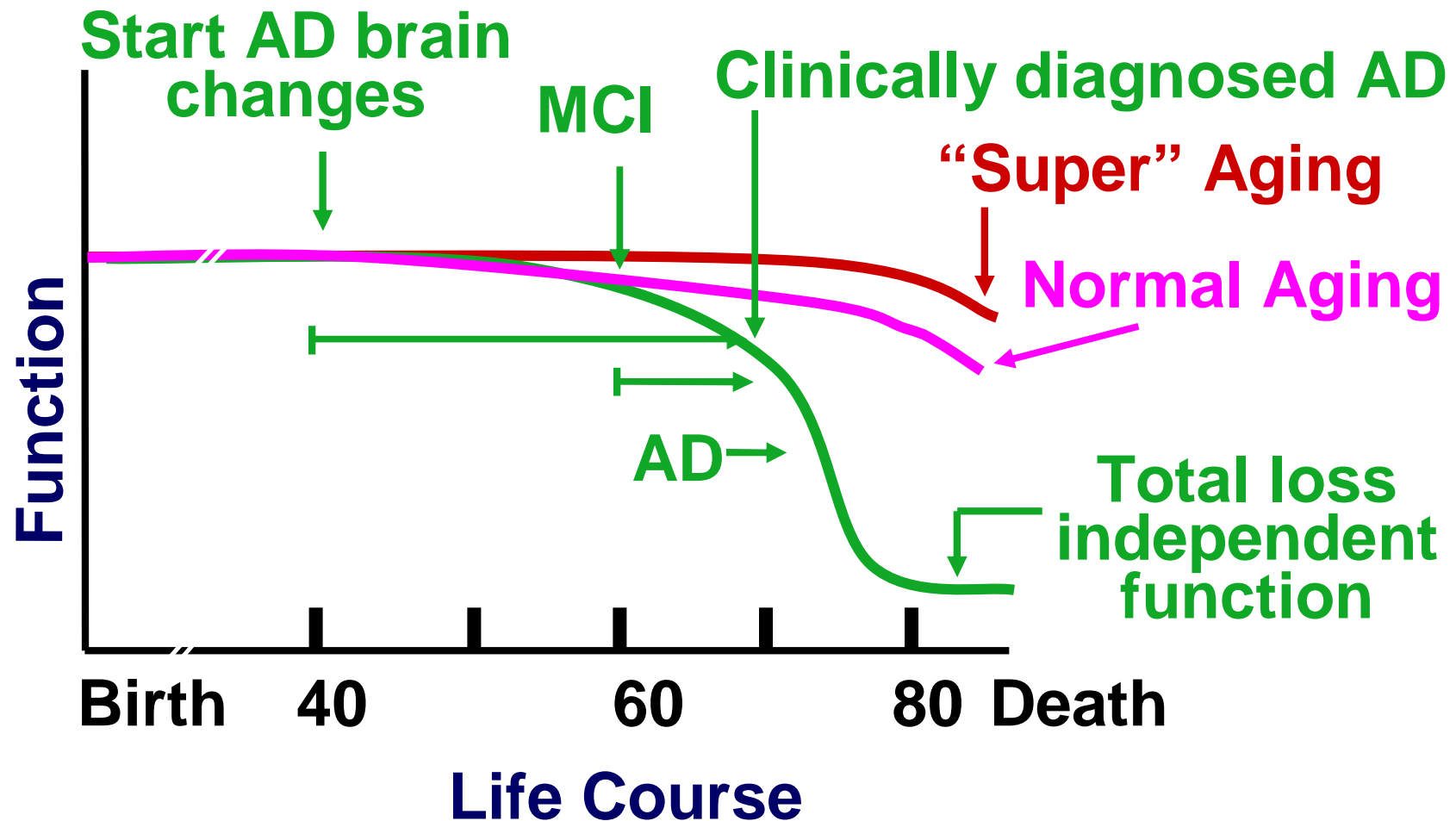
- RFA- Social Neuroscience of Aging
- RFA-Interventions to Remediate Age-related Cognitive Decline
- RFA- Development of Models to Forecast Medicare Expenditures
- RFA- Cost Effective Health Promotion Interventions/Programs for Older Workers
- PAS-Harmonization of Longitudinal Cross-National Surveys of Aging

Division of Neuroscience

Mission

Understanding the aging nervous system in order to foster the maintenance of health and improve the quality of life in the older population.

Changes in Super Aging, Normal Aging, and Neurodegenerative Diseases



Government Performance and Results Act (GPRRA)

Goal 3a:

By 2009, start at least one pilot trial on promising interventions based on results of previous trials and new leads for drug discovery.

By 2010, identify at least one imaging or biological marker or clinical or neuropsychological evaluation method that will help us perform less expensive, shorter, and more efficient drug trials for AD.

By 2011, start a new and efficient full-scale intervention trial based on results of previous trials and new leads for drug discovery, using a combination of the markers identified in 2010 to identify persons with cognitive decline who are most likely to develop AD.

By 2013, identify at least one clinical intervention that will delay the progression, delay the onset, or prevent Alzheimer's disease.

Geriatrics and Clinical Gerontology Program:

Examples of Research Emphases

- **Geriatric conditions and functional problems (frailty, incontinence)**
- **Age-related issues in disease diagnosis, e.g., effects of comorbidity**
- **“New” diseases of old age (vascular stiffening, sarcopenia)**
- **Hormonal therapies (estrogen, testosterone, growth hormone)**
- **Physical activity’s effects on aging changes and age-related morbidity and disability**
- **Aging before old age (reproductive aging, early physiologic changes)**
- **Exceptional longevity and exceptionally healthy aging**
- **Health implications of findings from basic aging research**

Behavioral and Social Research

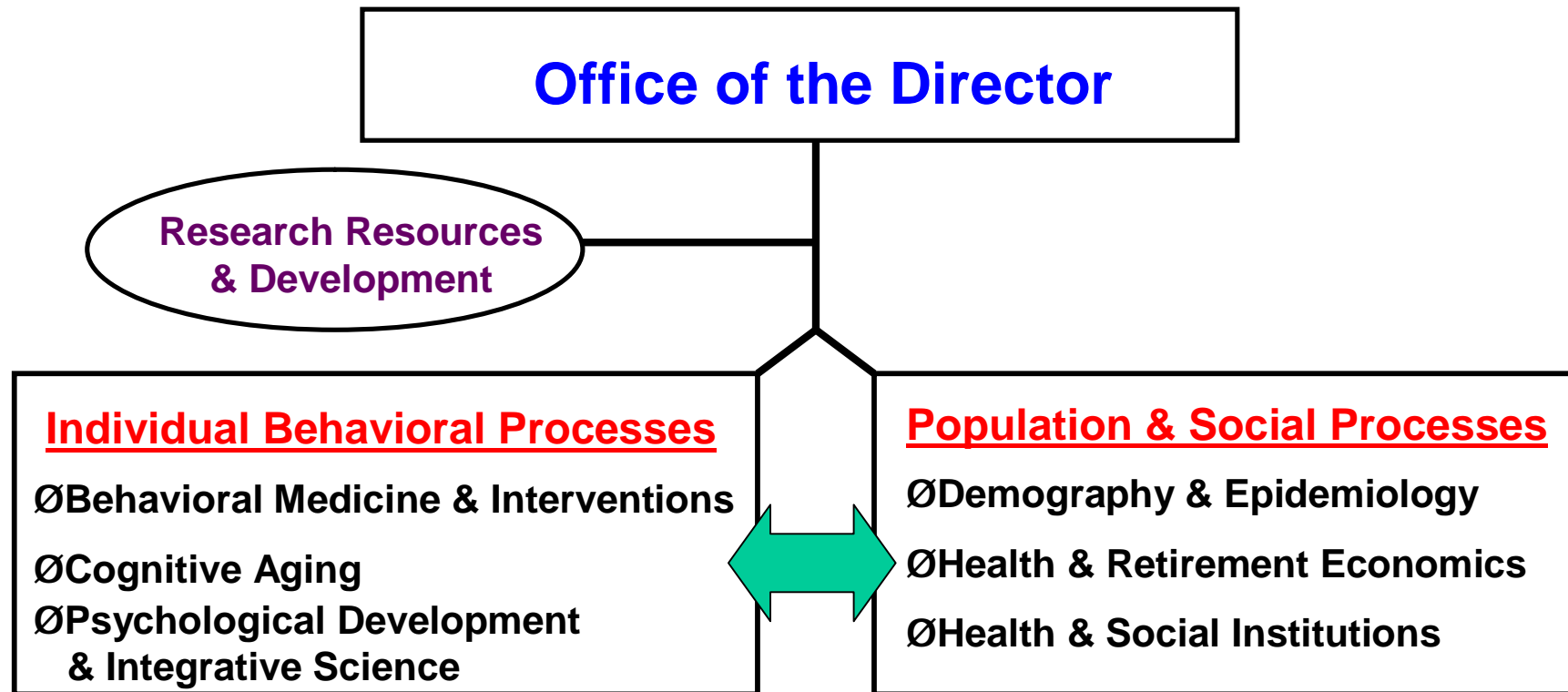
Division: areas of emphasis

- **Health Disparities**
- **Aging Minds**
- **Increasing Health Expectancy**
- **Health, Work, and Retirement**
- **Interventions and Behavior Change**
- **Genetics, Behavior, and the Social Environment**
- **The Burden of Illness & the Efficiency of Health Systems**

BSR Cross-Cutting Principles

- **Aging from Birth to Death -- Life Course Perspectives**
- **Biobehavioral Linkages & Collaboration with other NIA Programs**
- **Integration and Synthesis -- Multi-level Interactions Among Psychological, Physiological, Social & Cultural Levels**
- **Translation & Application of Findings**

Behavioral and Social Research Division



Selected IBP Initiatives

- **Basic Mechanisms of Behavior Change**
- **Social Neuroscience of Aging**
- **Emotion-- Cognition Interactions**
- **Neuroeconomics and Decision-making**
- **Cognitive Interventions**
- **New set of lifecourse cohorts**
- **Life course stress-health**
- **Interdisciplinary T32s – social neuro, neuroeconomics**
- **Interventions to reduce disability**
- **Measuring Wellbeing and Enhancing Wellbeing**
- **Elder Abuse**
- **Human Factors - Driving**

Selected PSP Initiatives

- **Disability Decline**
- **Understanding Divergent Trends in Longevity**
- **Medicare Forecasting**
- **National Accounts for Health and Well Being**
- **Retirement/Federal Workforce**
- **Harmonizing X-national Longitudinal Studies**
- **Medicare Part D**
- **Macroeconomic Impact of Population Aging**

Quadrennial BSR Review Panel

**NAS or IOM Member ‡ Nobel Laureate

John Cacioppo, PhD, U Chicago

**Alan Garber, MD, PhD, Department of Veterans Affairs & Stanford U

**Lisa Berkman, PhD, Harvard U

Laura Carstensen, PhD, Stanford U

**Nicholas Christakis, MD, PhD, Harvard U

Peggye Dilworth-Anderson, PhD, UNC at Chapel Hill

**James Jackson, PhD, U Michigan

‡Daniel Kahneman, PhD, Princeton U

**Ronald Lee, PhD, UC Berkeley

‡ Daniel McFadden, PhD, UC Berkeley

John Morris, MD, U Washington

**Samuel Preston, PhD, U Pennsylvania

**John Rowe, MD, Columbia U

James Smith, PhD, RAND

**James Vaupel, PhD, Max Planck Institute & Duke U

David Wise, PhD, Harvard U

(Executive Secretary: Rose Maria Li, MBA, PhD)

Quadrennial BSR Review Sub-panels

- **Genetics**
- **Demography, Social Epidemiology, Sociology of Aging**
- **Disparities**
- **Behavioral Economics and Community Interventions**
- **Cognitive Interventions**
- **Medicare, Health Services, and Long-term Care**
- **Psychology of Aging**
- **Satellite Accounts**
- **Social Neuroscience and Neuroeconomics**

Center Programs in DBSR

- **Resource Centers for Minority Aging Research**
- **NIA Centers for Demography of Aging**
- **Edward R. Roybal Centers for Applied Gerontology**
- **National Archive of Computerized Data on Aging**

DBSR commissions reports from the National Academies of Sciences (NAS) to develop areas :

- **Biosocial Surveys**
- **Preparing for an Aging World: The Case for Cross-National Research**
- **When I'm 64**
- **The Aging Mind: Opportunities in Cognitive Research**
- **Aging in Sub-Saharan Africa**
- **Health and Safety Needs of Older Workers**
- **Technology for Adaptive Aging**
- **Critical Perspectives on Racial and Ethnic Differences in Health in Late Life**
- **Between Zeus and the Salmon: The Biodemography of Longevity**
- **Multiple Origins, Uncertain Destinies**
- **Elder Mistreatment**
- **All Reports available online and on CD**

NAS Ongoing Panels

- **Research Program on the Design of National Health Accounts**
- **Panel on Divergent Trends in Longevity in High-Income Countries**
- **Workshop on Improving Measurement of Late-Life Disability in Populations Surveys: Going Beyond ADLs and IADLs**
- **Workshop on Collecting, Storing, Protecting and Accessing Biological Data Collected in Social Surveys**

BSR investment in developing key data resources

Health and Retirement Study

- Premier source of data on retirement, pensions and SS
- Links detailed health and economic data on couples
- ADAMS sub-study in-home cognitive assessments
- **Model for international co-funded comparisons (ELSA, SHARE)**

National Study of Disability Trends and Dynamics – New, to be a rich source for analysis of disability decline. Successor to NLTCS

Wisconsin Longitudinal Study – long-term panel study excellent source for study of stress, allostatic load, life events, health outcomes

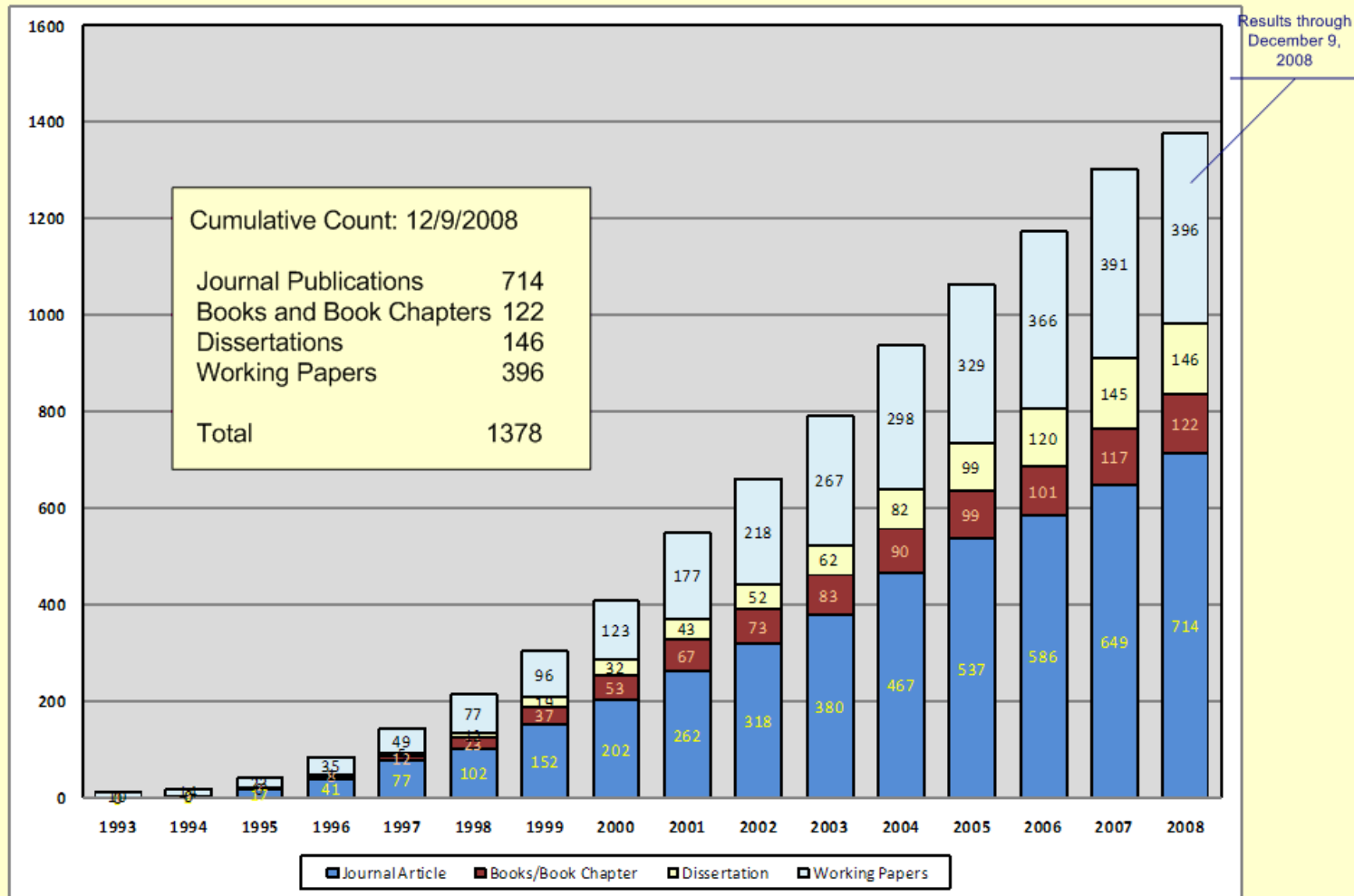
Midlife Development in the United States—follows individuals from early adulthood into midlife and old age, includes behavioral, social, psychological, neurological factors

Panel Study of Income Dynamics

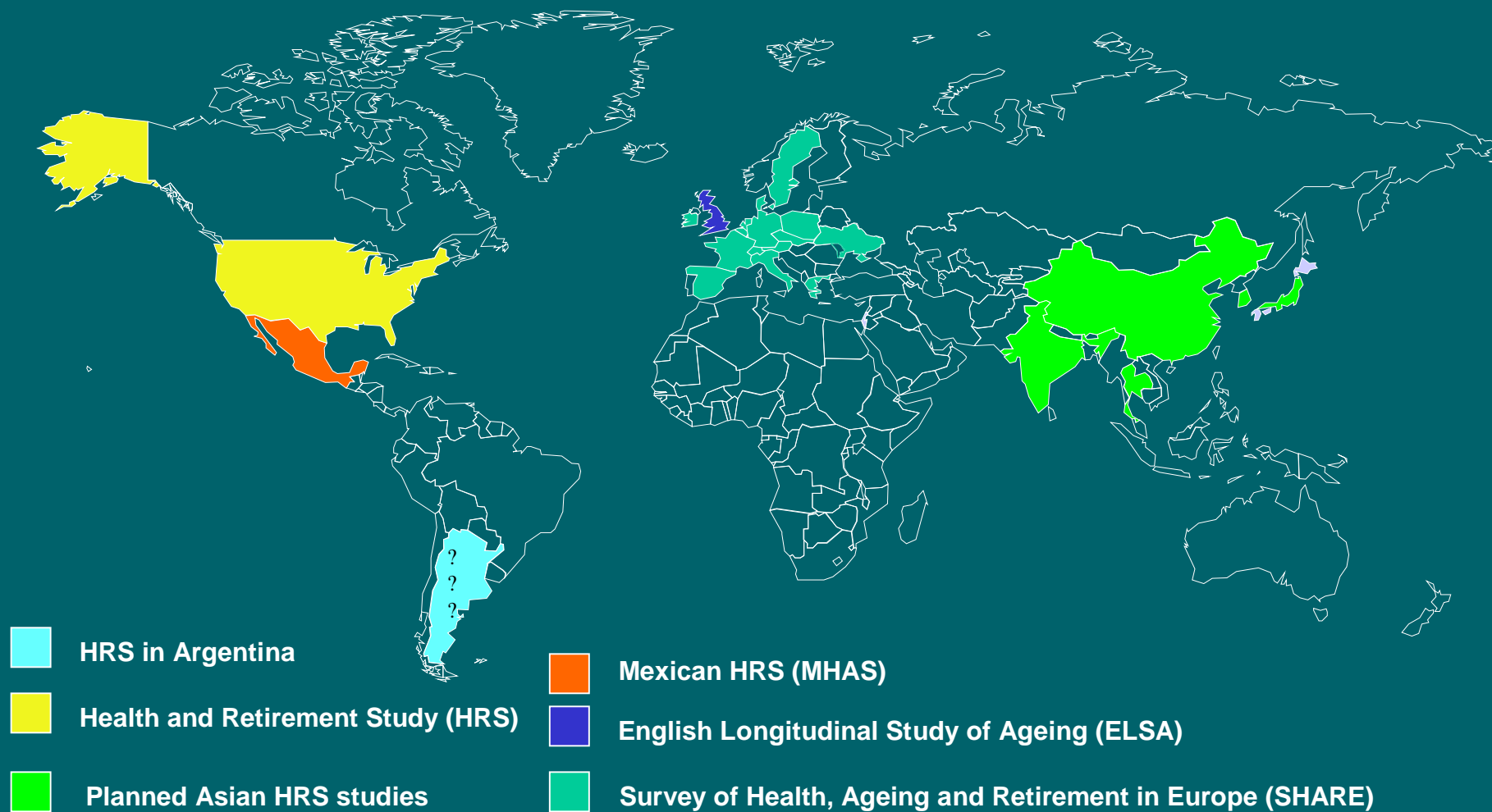
International surveys --ELSA, SHARE, Whitehall, SAE, etc

HRS Productivity

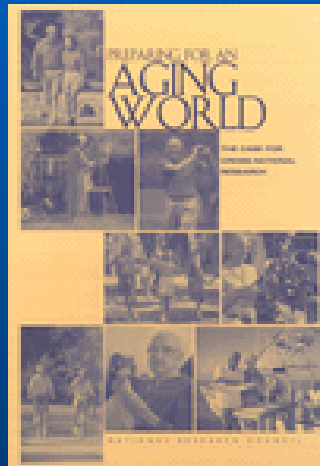
Scientific Productivity of HRS
HRS Publications, 1993-2008:
Cumulative Count by Type



HRS Studies' Global Coverage



NIA Sponsored NRC Report: *Preparing for an Aging World*



- n Expert recommendations for:
- n International research agenda
- n Comparable Data needed to implement that agenda

National Research Council (2001), "Preparing for an Aging World: the Case for Cross-National Research."



NATIONAL INSTITUTE ON AGING
NATIONAL INSTITUTES OF HEALTH
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

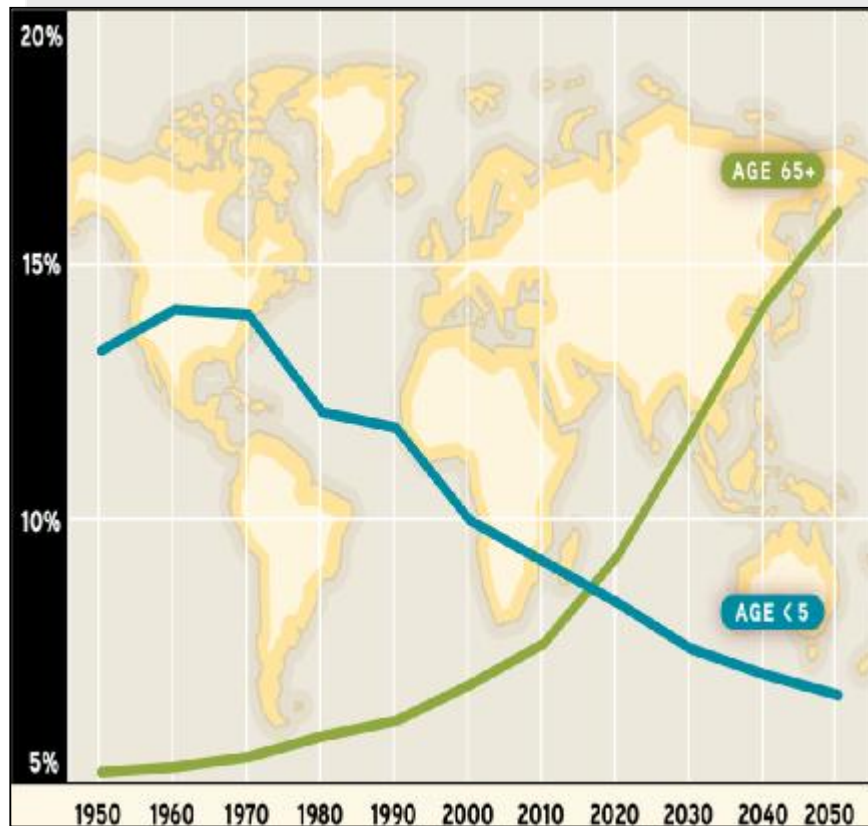
U.S. DEPARTMENT OF STATE

Why Population Aging Matters

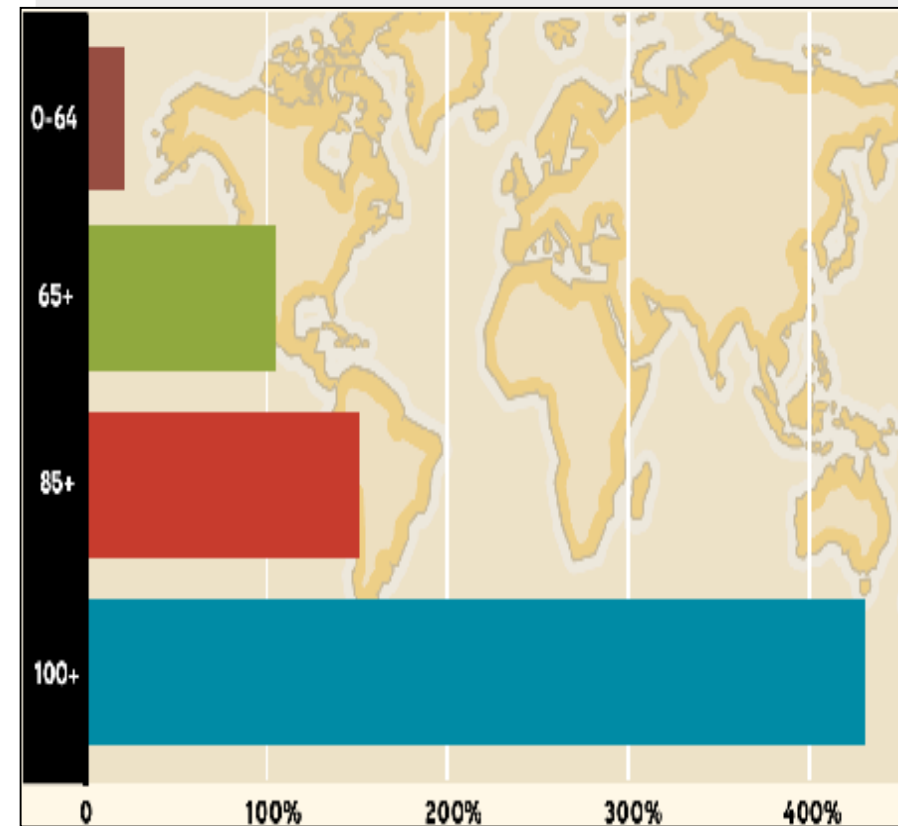
A Global Perspective



YOUNG CHILDREN AND OLDER PEOPLE AS A PERCENTAGE OF GLOBAL POPULATION



PROJECTED INCREASE IN GLOBAL POPULATION BETWEEN 2005 and 2030, BY AGE



United Nation Department of Economic and Social Affairs, Population Division. *World Population Prospects. The 2004 Revision*. New York: United Nations, 2005 in *Why Population Aging Matters: A Global Perspective* at www.nia.nih.gov/ResearchInformation/ExtramuralPrograms/BehavioralAndSocialResearch/GlobalAging.htm

NIA Accomplishments through Global Research

- **The Health and Retirement Study – international model for standardized surveys on health and economic status for older populations (England and 15 members of the EU, South Korea, Mexico, and developing in China, India and over 10 other countries)**
- **Alzheimer’s Disease Neuroimaging Initiative - NIH Biomarkers Consortium project that includes Canada and served as prototype for the EU, Japan and Australia**
- **More than two dozen cross national aging-related datasets were created and supported by NIA**

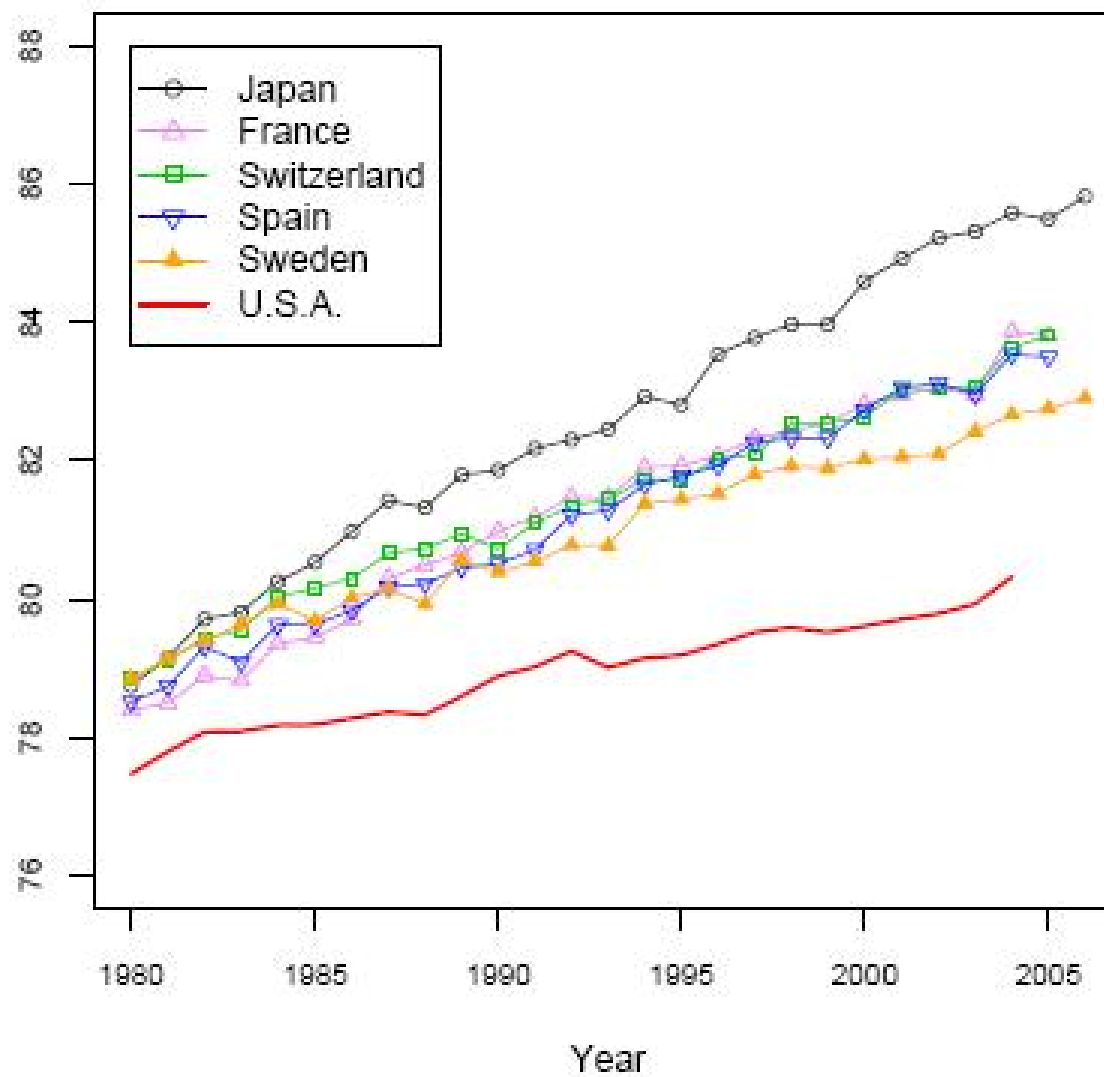
Key examples are:

- **Census International Database on Aging - 227 countries**
- **Human Mortality Database - 28 countries**
- **World Health Organization (WHO) Study on Global Ageing and Adult Health (SAGE), partially coordinated with INDEPTH**











NIA Accomplishments through Global Research

- **Variations in SORL1 gene suggest new genetic clue to Alzheimer's disease** – collaborated with institutions in Europe and Asia (Mayeux et al, *Nature Genetics*, 2007)
- **Indianapolis-Ibadan Dementia Project** – Black Americans in Indianapolis had significantly higher risk of Alzheimer's disease than residents of Ibadan, Nigeria
- **InChianti Follow-Up Study** – identified a precursor state for certain types of anemia
- **SardiNIA Study** – provides support for many genetic analyses (examples: asthma and arterial stiffness)
- **U.S. elders less healthy than English counterparts --HRS& ELSA-** Marmot, et al, *JAMA*, 2006)
- **Demographic comparisons of life expectancy - U.S. overtaken by 35+ other countries**
(Oeppen & Vaupel, *Science*, 2002; Tulijapurkar, Li & Boe, *Nature*, 2000.)
- **Public pensions plans major determinants of years in workforce**
(Gruber & Wise, *Social Security and Retirement around the World*, 1999)
- **Changing global burden of disease- chronic disease becoming dominant** (Lopez, et al, *Global Burden of Disease and Risk*, 2000)

US lagging in life expectancy, female, 1980-2006



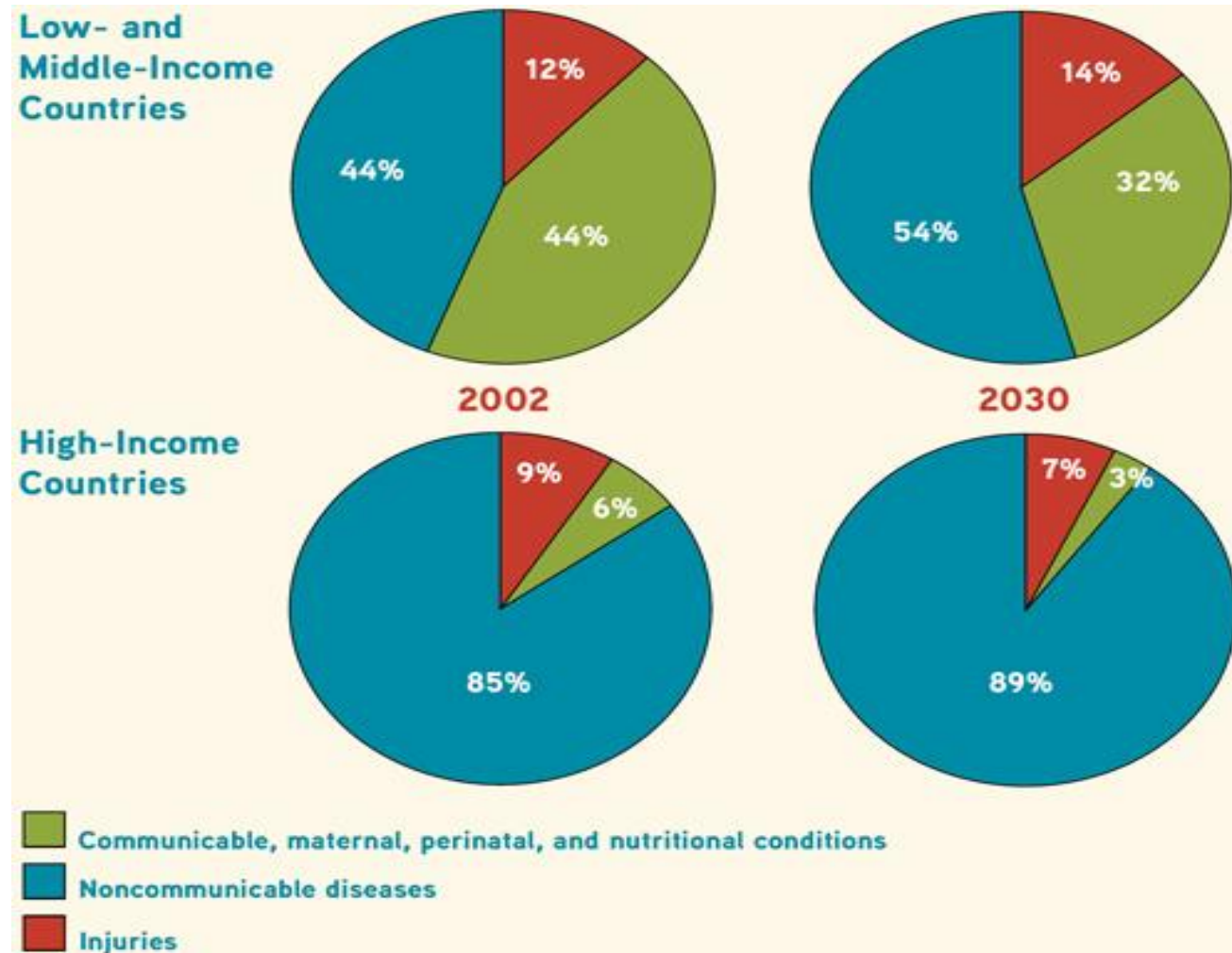
Developing World Disease Burden Expected to Shift by 2030

Condition or Disease	Projected Percent of Total DALYs Lost in Developing Countries*, 2005	Projected Percent of Total DALYs Lost in Developing Countries*, 2030
Perinatal conditions	6.8	 4.3
Lower respiratory infections	6.1	 3.1
HIV/AIDS	6.1	13.0 
Unipolar depressive disorders	4.4	5.4 
Diarrheal diseases	4.3	 2.0
Ischemic heart disease	4.0	4.6 
Cerebrovascular disease	3.3	3.9 
Malaria	2.5	 1.6
Tuberculosis	2.3	 1.0
Chronic obstructive pulmonary disease	1.9	3.2 

* Includes low income, lower middle income, and upper middle income nations as classified by the World Bank.

Source: WHO Projections of Mortality and Burden of Disease 2006; Mathers and Loncar, "Projections of global mortality and burden of disease", PLoS Medicine 3(11):2011-2030

The Increasing Burden of Chronic Non-Communicable Diseases: 2002-2030



Source: P01 AG 017625 (PI Murray)
Lopez, et al. *Global Burden of Disease by Risk Factors*. (2006)

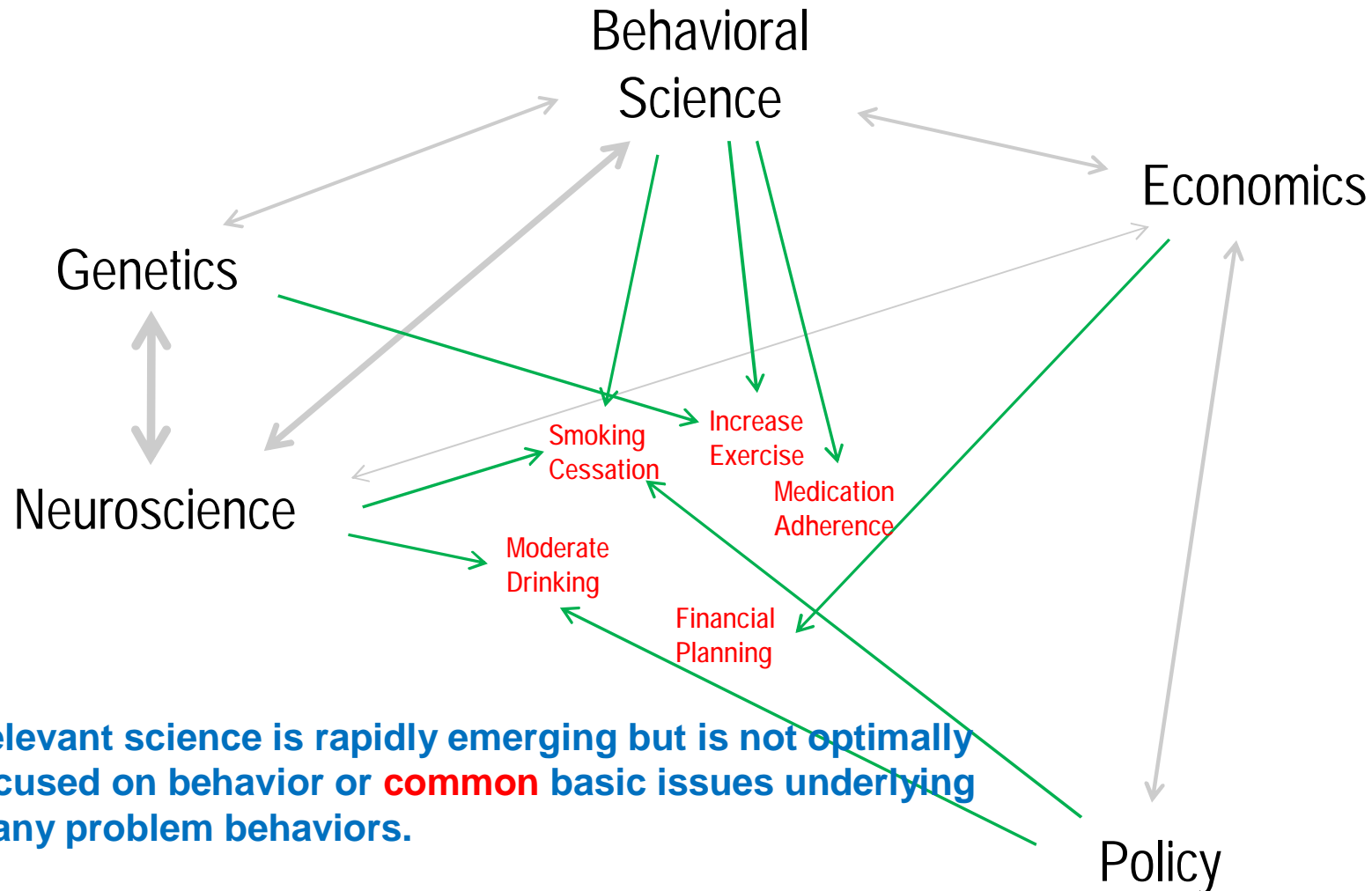
Social and Behavioral Interventions

- **Advanced Cognitive Training for Independent and Vital Elderly (ACTIVE)**
- **Resources for Enhancing Alzheimer's Caregiver Health (REACH)**
- **Experience Corps**
- **Pension Saving Reform:** automatic enrollment in employer-provided pension programs informed Pension Protection Act of 2006
- **Health Benefits of Workplace Policies and Practices (Berkman)**
- **Move To Opportunity – randomized natural expt**
- **Oregon Health Insurance Experiment –randomized natural expt**

Science of Behavior Change

- Information is rarely sufficient to get people to change risky behaviors, and sometimes makes things worse (smokers overestimate the risks)
- Problem is getting people to do what they already want to do, but never get around to doing, or start, but cannot maintain
- Interventions must be low cost and effective

Science of Behavior Change



- Relevant science is rapidly emerging but is not optimally focused on behavior or **common** basic issues underlying many problem behaviors.

**Using emerging new interdisciplinary fields
beh economics, cognitive neuroscience,
behavior genetics**

The NEW ENGLAND JOURNAL of MEDICINE

SPECIAL ARTICLE

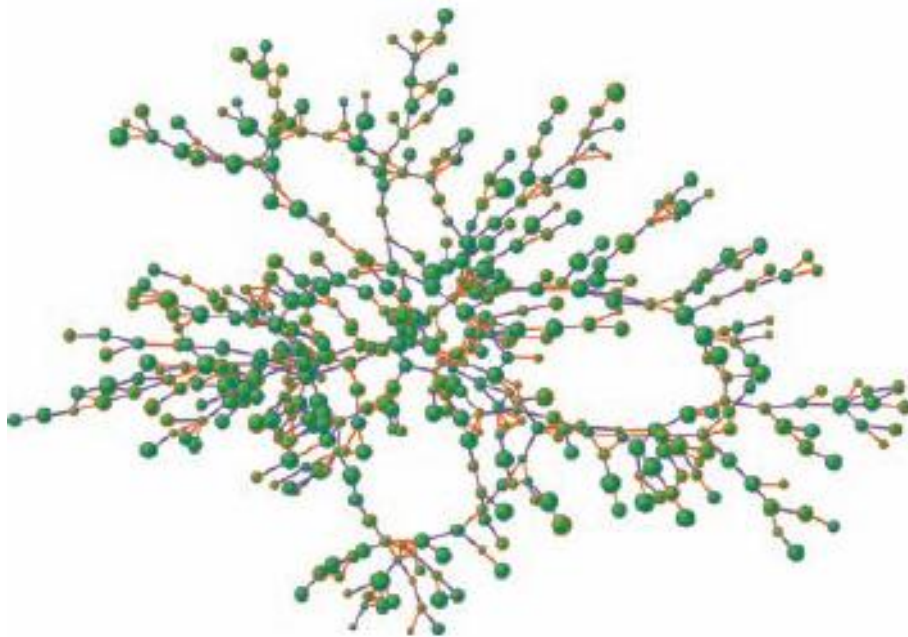
The Spread of Obesity in a Large Social Network over 32 Years

Nicholas A. Christakis, M.D., Ph.D., M.P.H., and James H. Fowler, Ph.D.

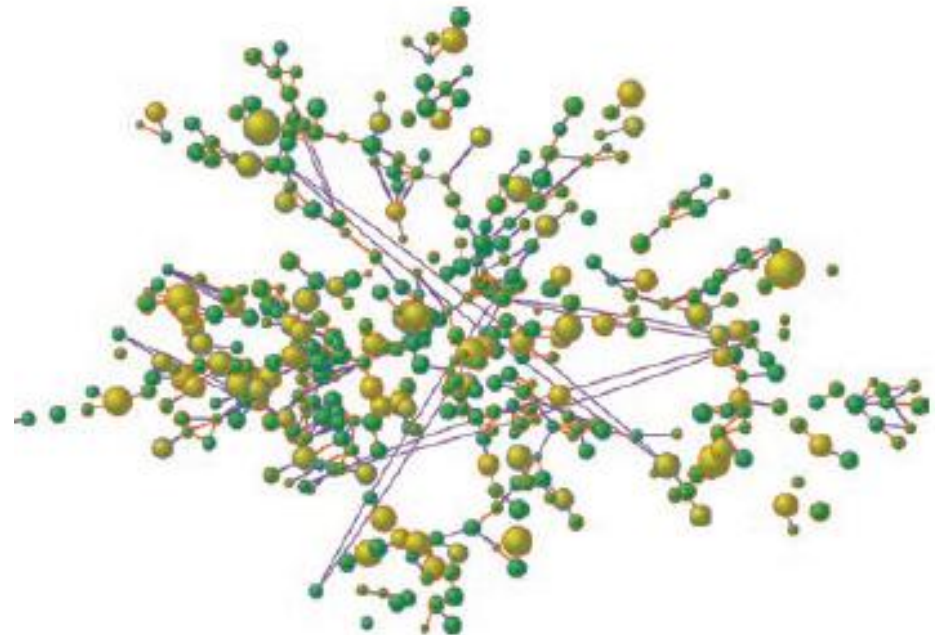
N ENGL J MED 357:4 WWW.NEJM.ORG JULY 26, 2007

Part of the social network from the Framingham Heart Study with information about BMI in 1975 compared to the year 2000

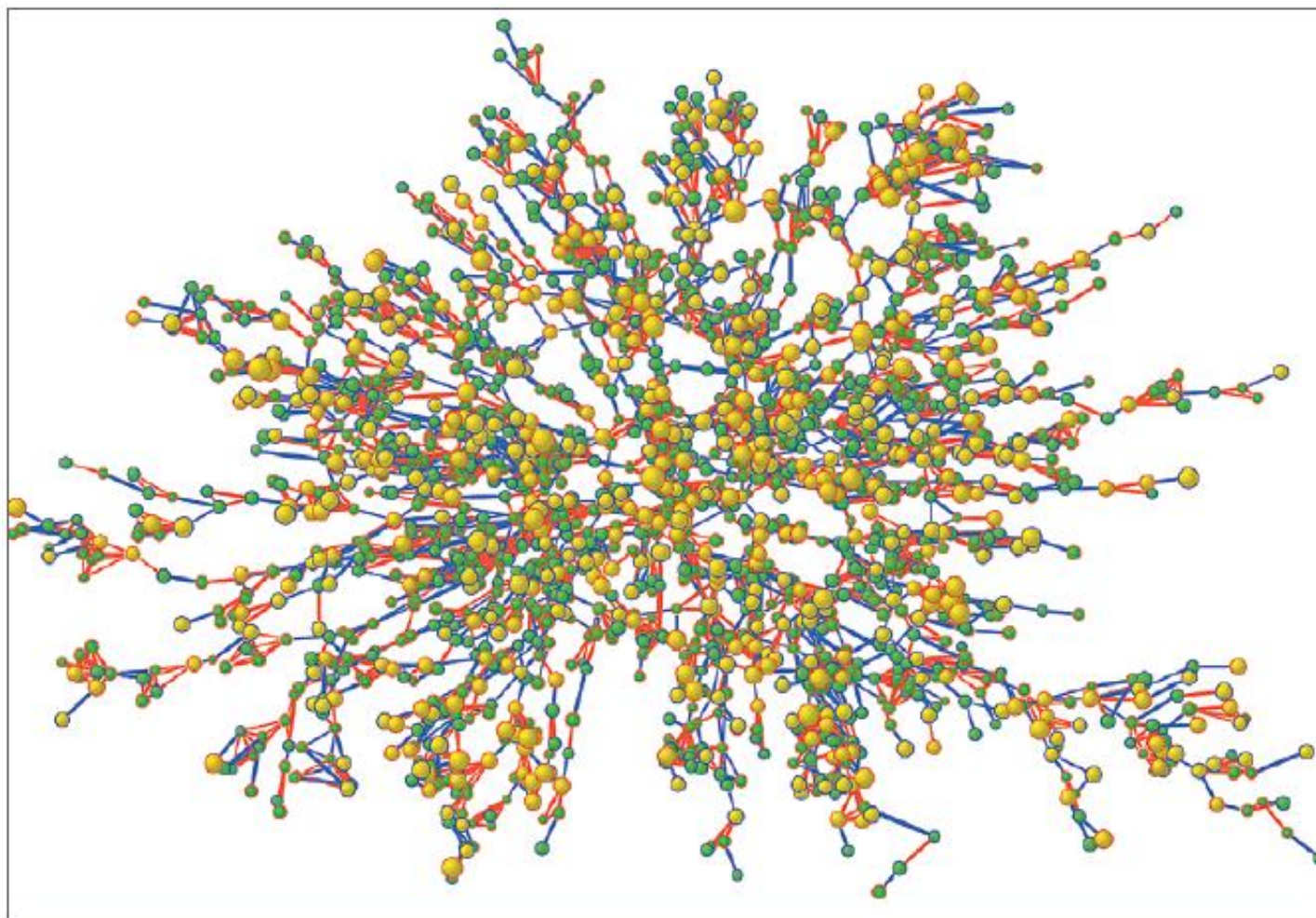
1975



2000



Largest Connected Subcomponent of the Social Network in the Framingham Heart Study in the Year 2000



Closing Thoughts

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- **This permitting multi-& interdisciplinary research**
- **Need portfolio of mechanisms, some long-term**
- **Problem too big for single country approach -- internat. collaboration and coordination needed**