

NIA Official: Aging Research Advances Hold Promise, Pose Potential Ethical Challenges

BACKGROUND

Since 1974, the National Institute on Aging (NIA) has been at the forefront of national research efforts to understand aging and support the health and well-being of older adults.

The NIA is funding a range of projects that address fundamental issues but also may warrant caution, according to NIA Deputy Director Marie Bernard, M.D., who oversees more than \$1 billion in annual aging research funding.

Dr. Bernard discussed the latest research during the first in a series of policy lectures presented by the Florida Policy Exchange Center on Aging in the USF School of Aging Studies. She concentrated on five emerging areas in her talk entitled, “Was George Orwell Right? Aging Research and its Implications for Policy”.

- Cell reprogramming
- Advances in Alzheimer’s disease research
- The science of behavior change
- Personal monitoring
- Genetic data collection

THE PROMISE OF NEW TECHNOLOGIES

Despite the reference to Orwell, who wrote of a controlled society run by “Big Brother” in his novel 1984, Bernard focused mostly on the benefits offered by the latest research.

Cell reprogramming

NIA funded investigators are studying how to instruct cells to revert to their original form, then develop into a new type of tissue, specifically neural tissue that could be used to model the Alzheimer’s disease (AD) process. This would, in part, enable researchers to study in detail the

mechanisms directing the development of the disease (Eastman, 2011).

Researchers are also using animal models to test the effects of clearing the body of cells that cause tissue to age (Baker et al., 2011). Further, researchers are investigating a process known as heterochronic parabiosis. This is the practice of joining the systems of old and young animals to study how the animals regulate the functions of aging and age-related diseases (Conboy, Conboy, & Rando, 2013).

Alzheimer’s disease advances

Research is showing that AD alters brain tissue long before the symptoms appear. The NIA is funding an initiative to examine how brain imaging technology can be used to detect the signs of AD in people who show no symptoms. The information would aid in assessing future treatments. This is part of a national plan to address the steep rise in AD prevalence that is expected over the next four decades. An estimated 50 million Americans will be diagnosed with AD by 2050, Dr. Bernard said. The primary aim of the national plan is to have effective prevention and treatment options by 2025.

The science of behavior change

This is the combined use of neural science, economic, behavior science, and psychology to get people to “do the right thing”, Dr. Bernard said. “It’s training people to make different decisions about what to eat, what to do.”

One recent study has shown the value of lifestyle interventions in preventing diabetes in high-risk populations. Another project, Resources for

Enhancing Alzheimer's Caregiver Health (REACH), uses interventions to reduce caregiver depression and delay the time to nursing home placement for the care recipient (Elliot, Burgio, & DeCoster, 2010).

Personal monitoring

The ORCATECH Living Laboratory (OLL), at Oregon Health & Science University (OHSU) recruits older adults to test technology-based health monitoring and interventions. The project involves the use of in-home devices to track such things as walking speed and the frequency of kitchen appliance use to detect functional decline. OLL is part of the Roybal Center for Translational Research on Aging at OHSU. At another Roybal Center at the University of Alabama at Birmingham, researchers are studying driving competence using an intervention known as the Useful Field of View (UFOV) test. Motor vehicle departments in several states already are using the UFOV to assess the competence of older drivers (National Institutes of Health, 2010).

Gene evaluation

In California, the Kaiser Permanente managed care consortium and the University of California San Francisco are conducting a genome-wide analysis of DNA samples from 100,000 volunteer

Kaiser Permanente members. This information will be linked to decades of clinical and other health information on the participants. Added to this database will be information about air and water quality, availability of fresh foods, and other health factors. This gives researchers a new platform for the study of genetic and environmental influences on a variety of health conditions across varied populations (Bole, 2009).

POLICY CONSIDERATIONS

Each of these developments has been deemed worthy of government funding, and Dr. Bernard presented them in the context of their benefits, particularly to a society facing a sharp rise in Alzheimer's disease and other ills of aging. But she concluded on a note of caution, in reference to Orwell's story of an authoritarian society in which independent thinkers were persecuted.

Will this emerging world of cell reprogramming, personal monitoring, and other such advances lead to an Orwellian future, Bernard asked. She answered that as these techniques are refined and further applied, they will pose ethical considerations that warrant careful study. Universities, she said, have a leading role to play in these inquiries into using advanced technology to address the challenges of an aging society.

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