Mainlanders, could contribute to the higher likelihood of retirement. However, the magnitude of mediator is much larger for the older cohort than the younger cohort. The study not only could benefit cumulative advantage approach by analyzing East Asia data but also bring policy implication, that retirement policy makers should reduce public pension incentive for public sector workers to delay the retirement age.

SESSION 3400 (SYMPOSIUM)

ENVIRONMENTALLY SUSTAINABLE DIET AND RECYCLING THERAPY FOR OLDER ADULTS’ WELL-BEING AND HEALTHCARE EXPENDITURES
Chair: Hsinyi Hsiao, Tzu Chi University, Hualien, Taiwan
Discussant: Aaron Hagedorn, University of Southern California, Los Angeles, California, United States

Due to the rapid climate change in recent years, global communities have seen an increased frequency of large-scale natural and man-made disasters. Acknowledging extravagant lifestyles and wasteful consumption of natural resources as prominent factors leading to intensified stress placed on the biosphere and ecosystems, many older adults with chronic medical conditions or disabilities in Taiwan have promoted environmental sustainability through two ways: 1) participating a recycling program in their local communities by collecting, sorting, and reclaiming reusable resources that are regenerated into eco-friendly blankets for disaster survivors and 2) practicing plant-based diet to promote healthy lifestyle and mitigate climate change. These older participants of environmentally sustainable initiatives believe the interconnectedness among humanity, the environment, and sustainable lifestyles. To understand association between the recycling therapy and older adults’ well-being a quasi-experimental design with 72 people age 60 and older (recycling group vs. non-recycling group) and photovoice were used to examine longitudinal effects of the recycling therapy on physical and mental health. To examine the effects of plant-based diet on dementia and health care cost ten-year data from Taiwan’s National Health Insurance Database were used by two studies to compare risk of dementia and medical expenditure between vegetarian and non-vegetarian groups among older adults in Taiwan. Four presentations in the symposium will discuss positive outcomes of environmental volunteering on older adults’ physical and mental wellness and longitudinal effects of a cohort with environmental-friendly diet on dementia risk and lower actual health care expenditures.

ASSOCIATION BETWEEN ENVIRONMENTALLY FRIENDLY DIET AND LOWER HEALTH CARE EXPENDITURES
Chin-Lon Lin,1 Tina H. Chiu,2 Jen-Hung Huang,3 and Ming-Nan Lin3, 1. Dalin Tzu Chi Hospital, Dalin, Chiayi, Taiwan (Republic of China), 2. Fu Jen Catholic University, New Taipei, New Taipei, Taiwan (Republic of China), 3. National Taiwan University, Taipei, Taipei, Taiwan (Republic of China)

Vegetarian diets have decreased incidence rates of chronic non-communicable diseases that have been associated with burden on medical systems worldwide. Previous studies propose a relationship between meat consumption and high medical expenditure; however, there is a dearth in...
the literature with strong evidence supporting the hypothesis between two factors. Using the data from Taiwan’s National Health Insurance Database this study is the first one comparing medical expenditure between vegetarian and non-vegetarian groups among older adults in Taiwan. In the National Health Insurance Database there were 2127 vegetarians matched with 4254 non-vegetarians based on age and gender from 2005 to 2014. Vegetarian diet is associated with approximately 10 – 15% lower total and outpatient medical expenditure. Vegetarians had lower medical expenditure incurred by diabetes and metabolic diseases, mental diseases, and genitourinary diseases. Implication for future research will be discussed at the presentation.

SESSION 3405 (SYMPOSIUM)

EPIGENETICS OF STRESS AND ADAPTATION ACROSS HEALTHSPAN AND LIFESPAN

Chair: Luigi Ferrucci, Translational Gerontology Branch, Intramural Research Program, National Institute on Aging, National Institutes of Health, Baltimore, Maryland, United States

Co-Chair: Shabnam Salimi, University of Maryland Baltimore School of Medicine, Baltimore, Maryland, United States

Discussant: Luigi Ferrucci

Any stimulus that endangers body integrity (stressor) results in an adaptive response to resolve stressful state and determine adaptive or and maladaptive responses. Both chronic extrinsic and intrinsic stressors can produce long-lasting, epigenetic changes in various organs that can eventually result in accelerated changes in bio-physio-pathology. There is initial evidence that stress response involves mechanisms of the epigenetic basis of adaptation and stress response to biological aging and chronic diseases. With aging, homeostasis stability declines causing augmented vulnerability to the external and internal stress. Individuals in whom vulnerability trespass a certain threshold experience accelerated aging and deterioration of health and/or “secondary aging” phenomena such as premature mortality. Because of substantial heterogeneity of the rate of decline in homeostatic stability, there is individual variability in the age of appearance of chronic diseases and the increased risk of disability and mortality. Thus, tools for the quantification of a stress response would be clinically valuable. Therefore, this symposium suggests approaches to study the epigenetic basis of molecular adaptations across various age, organs’ health-span, and life-span.

DNA METHYLATION AT THE CROSSROADS OF PHYSIOLOGICAL RESPONSE TO STRESS AND PATHOLOGICAL BIOLOGY

Shabnam Salimi, University of Maryland Baltimore School of Medicine, Baltimore, Maryland, United States

It is likely that the dimension and the scope of stress perception are different in different body systems conditioning their specific rates of aging. Moreover, in addition to between-individual variabilities in body response to stress, there is inter-organs variability in adaptations resulting in pleiotropy of phenotypes evolved with aging. Epigenetic measures may be considered possible readouts of the extent and proxy of the adaptive response to intrinsic and/or extrinsic stress in body organs. It is thus important to disentangle the epigenetic basis of stress, adaptation, and pathology. In this symposium we discuss a combination of the specific DNA methylation patterns relate to the diseases as an intrinsic stressor and adaptation responses imposed to bodily systems, and also accelerated body organ morbidities. We explain the static and dynamic DNA methylation differentiation over time as the “epigenetic code” of accelerated pathology across various age using longitudinal data.

EPIGENETICS MARKERS OF AGING AND EXPOSURES

Joanne Murabito, 1. Boston University, Boston, Massachusetts, United States

Widespread changes to the epigenome occur with aging. DNA methylation is one of the most commonly studied epigenetic mechanisms, reflects lifetime exposures that impact aging, and is associated with age-related disease risk. Many longitudinal cohort studies have existing cross-sectional or longitudinal DNA methylation data along with genotype and expression data permitting investigation of relationships between DNA methylation markers, exposures, and disease. The data can be leveraged to conduct large epigenome-wide association studies (EWAS) of aging and age-related disease to identify DNA methylation biomarkers and lead to insights into novel biologic pathways for development of interventions to delay aging. DNA methylation age measures robustly predict chronologic age and associate with both healthspan and lifespan. During the workshop, examples from cohort studies and the CHARGE consortium will be presented.

ENVIRONMENTAL EPIGENETICS AND AGING

Andrea Baccarelli, 1. Columbia,Mailman School of Public Health, New York, New York, United States

The human epigenome is a flexible, environmental sensitive component of human biology that changes over time. Multiple studies have identified prospective changes in epigenetic marks that indicate that the epigenome ages as we grow older. These changes have been leveraged to create multiple indicators of age that may also predict mortality and age-related disease. There is ongoing research to determine the extent to which age-related epigenomics changes are inherent to cell biology and/or driven by lifestyle and environmental factors. In this presentation, I will review the current evidence derived from human aging studies and potential contributions to human health and disease. I will discuss the source of data, methodological challenges for large human studies, limitations and possible future directions.

EPIGENETIC CLOCKS OF COMPUTED TOMOGRAPHY MEASURES OF FATTY ORGANS

Ake T. Lu, 1 and Steve Horvath, 2. Department of Human Genetics, University of California, Los Angeles, Los Angeles, California, United States, 2. UCLA, Los Angeles, California, United States

DNA methylation (DNAm) based biomarkers collectively known as “epigenetic clock” yielding accurate measure of age in any tissue across the entire life course have associated with a large host of age-related conditions. To study their implications in metabolic syndromes,