non-communicable conditions: cancer, neurodegeneration, frailty, and functional declines in immune and inflammatory processes. All share a common connection in metabolic dysfunction. Furthermore, aging itself is associated with changes in metabolism, although the underlying drivers for these changes are unknown. Here we introduce speakers working at the cutting edge in metabolism research, and whose studies are of direct relevance to aging. Dr. Chandel will focus on mitochondrial biology, describing recent advances in understanding the mechanisms of the beneficial effects of metformin. Dr. Haigis takes the mitochondrial theme to cancer biology, the area of research that revived metabolic perspectives in biomedical research. Dr. Najt’s talk describes a less well studied organelle, the lipid droplet, and its role in a rapidly expanding area of research on lipid metabolic regulation specifically in the context of aging. Dr. Brown-Borg will present data on nutritional and genetic modulation of metabolism and how pathways converge to influence chromatin and epigenetic regulation of gene expression. Together our speakers explore new concepts in metabolism research that are of particular relevance to aging. This session aligns with the concept of GeroScience, the more we know of aging biology the better we understand diseases and disorders of aging. This session will demonstrate that metabolism, its regulation, and its influence on key processes linked to health and longevity, place it in a central position as we seek to discover targets and interventions to improve human aging.

THE ROLE OF MITOCHONDRIA IN AGING AND CANCER
Marcia Haigis, Harvard Medical School Boston, Massachusetts, United States

METHIONINE METABOLISM IN AGING REGULATION
Holly M. Brown-Borg, University of North Dakota School of Medicine & Health Sciences, Grand Forks, North Dakota, United States

Aging is the major risk factor for many diseases but the mechanisms are poorly understood. The risk of developing hepatic steatosis increases with age and the health impact of this disease is negative and high. When challenged with high fat diets, long living Ames mice withstand the detrimental metabolic effects that occur in normal mice. We examined transcriptomic and epigenomic profiles of Ames and wild type hepatocytes in the presence or absence of fat to demonstrate that the epigenomic profile drives transcription factor and downstream gene expression resulting in susceptibility or resistance to fatty liver disease. We found that markers of steatosis are related to gene expression in wild type and Ames mice, and dwarf mice retain fewer lipid droplets compared to wild type mice. These studies will provide data to guide our understanding of mechanisms leading to hepatic disease and define factors that provide protection from age-related metabolic disorders.

METFORMIN INHIBITS MITOCHONDRIAL COMPLEX I TO PROMOTE HEALTH
Navdeep Chandel, Northwestern University, Illinois, United States

The major function of mitochondria in cellular homeostasis has been the generation of ATP through oxidative phosphorylation. However, we have previously demonstrated that mitochondria can serve as signaling organelles by releasing low levels of reactive oxygen species (ROS) and TCA cycle metabolites that are essential for hypoxic activation of HIF, antigen activation of T cells, cellular differentiation and proliferation of cancer cells. The anti-diabetic drug metformin has been proposed to inhibit mitochondrial complex I. We will present data indicating that metformin inhibits mitochondrial complex I to exert its biological effects through controlling ROS, ATP, and NAD⁺.

LIPID DROPLET SIGNALING IN METABOLIC HEALTH AND AGING
Charles Najt, Douglas G. Mashek, University of Minnesota, Minneapolis, Minnesota, United States

Lipid droplets (LDs) are neutral lipid rich organelles involved in lipid storage, fatty acid trafficking, and signaling. Emerging evidence from our laboratory and others suggests that the specific LD resident proteins couple/uncouple cells and tissues from inflammation and metabolic dysfunction. However, the mechanism by which LD proteins influences these critical pathways remains unknown. We will present data delving into the role of LD proteins Perilipin (PLIN) 2 and 5 in balancing cellular energy metabolism, mitochondrial function, and inflammation. Data will be presented defining novel mechanisms through which PLIN2 orchestrates eicosanoid production as a means to promote inflammation. We will contrast these findings to PLIN5, which uncouples LD accumulation from metabolic dysfunction and inflammation, in part due to its promotion of SIRT1 signaling. Overall, these studies will highlight a crucial role of LD metabolism and signaling in regulating cellular energy homeostatic processes known to be key players in governing healthspan.

Session 4110 (Paper)

PHYSICAL ACTIVITY AND WELL-BEING

DELAYING HEALTH CARE DUE TO THE COVID-19 PANDEMIC: ASSOCIATIONS WITH PHYSICAL AND MENTAL HEALTH AND PREVENTIVE CARE
Felicia Wheaton, Terika Scatliffe, and Matilda Johnson, 1. Xavier University of Louisiana, New Orleans, Louisiana, United States, 2. Bethune-Cookman University, Daytona Beach, Florida, United States

Health care is important for maintaining optimal physical and mental health. However, due to the COVID-19 pandemic, many older adults have delayed or postponed care. Data from the special midterm release of the 2020 Health and Retirement Study (HRS) were used to examine the relationship between chronic conditions and delayed care, as well as between delayed care and mental health outcomes and preventative care among Americans aged 50+ (N=3,266). Approximately 30% of respondents said yes when asked “Since March 2020, was there any time when you needed medical or dental care, but delayed getting or did not get it at all?” Of those, 55% said their provider cancelled, closed or suggested rescheduling, 28.5% decided it could wait, and 20.8% were afraid to go. Results from OLS and
logistic regression, controlling for sociodemographic characteristics, indicate that those with lung disease and those with a heart condition had significantly higher odds of delaying care. Delaying care was associated with significantly higher odds of poor self-rated health and feeling depressed, as well as significantly higher average hopelessness, loneliness and negative affect and significantly lower average positive affect. Surprisingly, delaying care was not associated with receiving a flu shot, cholesterol test, colonoscopy, mammogram or prostate exam in the previous two years. It is likely that the full effects of delaying health care during the pandemic have yet to be felt and there is a need to study the implications of such delays.

LIMITATIONS IN PHYSICAL ACTIVITIES AND LONELINESS: THE ROLE OF GUILT FOR PERCEIVING ONESELF AS A BURDEN

Maria del Sequeros Chaparro, Isabel Cabrera, Carlos Vara-García, José Adrián Fernandes-Pires, Samara Barrera-Caballero, Laura Mérida-Herrera, María Márquez-González, and Andrés Losada-Baltar.

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Loneliness is a prevalent problem associated with negative health consequences for older adults, such as greater cognitive decline. Limitations to perform physical activities have been associated with greater loneliness in older adults. This association could be moderated by maladaptive social cognition or feelings, such as guilt associated with perceiving oneself as a burden. The objective of this study was to analyze the moderating effect of guilt associated with perceiving oneself as a burden in the relationship between limitations in physical activities and loneliness. Participants were 195 community-dwelling people 60 years or older not showing explicit cognitive or functional limitations that prevent activities of daily life, but who may present limitations in some physical activities (e.g., walking a kilometer or more). A linear regression analysis was conducted for testing the interaction between limitations in physical activities and guilt for perceiving oneself as a burden in loneliness, controlling for gender and age. The interaction between limitations in physical activities and guilt for perceiving oneself as a burden was the only significant predictor of loneliness and the model explained 18.30% of the variance. Limitations in physical activities influenced loneliness when people have high levels of guilt for perceiving oneself as a burden. This study suggests that guilt for perceiving oneself as a burden may play an important role in the association between limitations in some physical activities and loneliness.

LUNG FUNCTION IN OLD AGE AND PHYSICAL ACTIVITY FROM MIDLIFE TO OLD AGE: LONGITUDINAL STUDY WITH 24-30 YEARS’ FOLLOW-UP

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The study investigated the role of physical activity, from midlife to older age, in relation to lung function in older age. In order to increase the understanding of the relationship between physical activity and lung function, the relationship between physical activity in midlife and physical activity in older age was also studied. Two Swedish studies based on nationally representative samples were used in this study, the Level of Living Survey, LNU, and the Swedish Panel Study of Living Conditions of the Oldest Old, SWEOLD. The participants were interviewed on three occasions; at the mean ages of 53 years, 61 years, and 81 years. The average follow-up time from the last to the first interview was 24-30 years. The results show that more physical activity in late midlife (mean age of 61 years) was associated with better lung function in older age. The association persists but attenuates when physical activity in older age was included in the analyses. There was also a strong association between physical activity in older age and better lung function in older age. Physical activity in late midlife had a positive association with physical activity in older age. This study shows the importance of physical activity in late midlife and in older ages to maintain good lung function in older ages. To invest in preventive actions in the form of physical activity are vital to be able to promote healthy aging, and should include the oldest old (76+).

PSYCHOSOCIAL AND PHYSICAL ACTIVITY OUTCOMES AMONG GROUP LIFESTYLE BALANCE PROGRAM PARTICIPANTS WITH ARTHRITIS

Taylor Hudzinski, Ferdinand Delgado, and Cheryl Der Ananian.

1. Arizona State University, Phoenix, Arizona, United States, 2. Arizona State University, Arizona State University, Arizona, United States

Background: Weight loss and physical activity (PA) are recommended for arthritis management. The Group Lifestyle Balance (GLB) Program(TM) is an evidence-based, lifestyle change program for weight loss in individuals with prediabetes, but hasn’t been evaluated in people with arthritis.

Purpose: The purpose of this study was to evaluate the effectiveness of an adapted version of the GLB program on PA and psychosocial outcomes related to weight loss among overweight (Body Mass Index >27) individuals with arthritis.

Methods: A single-group, quasi-experimental design was used to examine the effects of the adapted GLB program on measures of PA and psychosocial outcomes. All participants (N=15) received the GLB program and completed the following surveys: CHAMPS PA, Self-Efficacy for PA (SE), Social Support for PA (SS), Weight Loss Efficacy (WEL) and Barriers to Healthy Eating (BHE) at baseline, 12-weeks, 6 months, and 12 months. Repeated measures ANOVA and the Friedman Test were used to examine changes over time.

Results: Participants (aged 53-79 years) were primarily female (82%), white (94%), and college educated (94%). Significant improvements were found in BHE subsections of self-control and motivation (p=0.002), daily mechanics (p=0.042), and WEL subsections of availability (p=0.049), social pressure (p=0.010), physical discomfort (p=0.011), and positive activities (p=0.007). Weekly caloric expenditure...