the Aβ-expressing strain is a progressive paralysis that can be halted with treatment of known effectors of Alzheimer's disease. As such, we screened our battery of compounds with this strain to determine which compounds have a significant affect on delaying Aβ-associated paralysis. Lastly, using the WormBot's ability to capture video recording, we examine how each compound affects mobility as animals age.

SESSION 835 (POSTER)

BIOLOGY OF AGING IV

EFFECT OF CALORIC RESTRICTION AND RAPAMYCIN ON OVARIAN AGING IN MICE

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The ovarian follicular reserve of primordial follicle declines with aging in female mammals. Caloric restriction (CR) has been shown to increase the preservation of the ovarian follicular reserve. Likewise, rapamycin has similar effects to CR on the ovarian reserve. Therefore, the aim of our study was to evaluate the effects of rapamycin and CR on the metabolism and ovarian follicular reserve and gene expression in mice. Thirty-six female mice were used, and allocated into 3 groups: control, rapamycin (4mg/kg body weight every other day) and 30% CR. At 85 days of treatment, an insulin tolerance test (ITT) and glucose tolerance test (GTT) was performed. At 93 days ovaries were collected for analysis. CR females had lower body weight ($P<0.05$) and were more insulin sensitive ($P=0.003$), while rapamycin treated females did not change body weight ($P>0.05$) and were more resistant to insulin ($P<0.05$). Females from the CR and rapamycin groups had a twice higher number of primordial follicles ($P=0.02$ and 0.04) and half the number of primary, secondary and tertiary follicles ($P<0.05$). Both CR and rapamycin females had increased ovarian gene expression of Foxo3a mRNA ($P<0.05$). In conclusion, female mice from rapamycin and CR groups had an increased ovarian follicular reserve associated to higher expression of Foxo3a mRNA, despite divergent metabolic effects of the treatments.

LATE-LIFE TIME-RESTRICTED FEEDING AND EXERCISE DIFFERENTIALLY ALTER HEALTHSPAN IN OBESITY

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Aging and obesity increase multimorbidity and disability risk, and determining interventions for reversing healthspan decline is a critical public health priority. Exercise and time restricted feeding (TRF) benefit multiple health parameters when initiated in early-life, but their efficacy and safety when initiated at older ages are uncertain. Here, we tested the effects of exercise versus TRF in diet-induced obese, aged mice from 20 to 24 months of age. We characterized healthspan across key domains: body composition, physical, metabolic, and cardiovascular function, activity of daily living (ADL) behavior, and pathology. We demonstrate that both exercise and TRF improved aspects of body composition. Exercise uniquely benefited physical function, and TRF uniquely benefited metabolism, ADL behavior, and circulating indicators of liver pathology. No adverse outcomes were observed in exercised mice, but in contrast, lean mass and cardiovascular maladaptations were observed following TRF. Through a composite index of benefits and risks, we conclude the net healthspan benefits afforded by exercise are more favorable than those of TRF. Extrapolating to obese older adults, exercise is a safe and effective option for healthspan improvement, but additional comprehensive studies are warranted before recommending TRF.

GROWTH DIFFERENTIATION FACTOR 15 IS CORRELATED TO MARKERS OF IMMUNOSENESCENCE IN MONOCYTES

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Immunosenescence is an age-associated decrease in function of immune cells precipitated by a variety of mechanisms and affecting nearly every immune cell subset. In myeloid cell subsets, aging reduces numbers of phagocytes and impairs their functional abilities, including antigen presentation, phagocytosis, and bacterial clearance. Recently, we have described an aging effect on several functions indicating immunosenescence in monocytes, including impaired mitochondrial function and reduced inflammatory cytokine gene expression during stimulation with lipopolysaccharide (LPS). We hypothesized that circulating factors altered by the aging process underly these changes. Growth/differentiation factor-15 (GDF-15) is a distant member of the transforming growth factor-beta superfamily that has known anti-inflammatory effects in macrophages and has recently been shown to be highly differentially expressed during aging. We used biobanked serum and plasma samples to assay circulating GDF-15 levels in subjects from our previous studies and examined correlations between GDF-15 levels and monocyte mitochondrial function and inflammatory responses. Monocyte interleukin-6 production due to LPS stimulation was negatively correlated to plasma GDF-15 levels ($p = 0.046$). Additionally, serum GDF-15 was positively correlated to circulating CD16+ monocyte proportions ($p = 0.021$) and negatively correlated to monocyte mitochondrial respiratory capacity ($p < 0.001$). Therefore, our data suggest that GDF-15 is a potential circulating factor affecting a variety of monocyte functions and promoting monocyte immunosenescence, and thus is an attractive candidate for therapeutic intervention to ameliorate this.

AGE-RELATED DIFFERENCES IN IMMUNO-HEMATOLOGIC PROFILES AND THEIR ASSOCIATION WITH ALL-CAUSE MORTALITY

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