and focus groups with home care professionals (n=16) of community-dwelling people with dementia. Inductive qualitative content analysis revealed that both groups of caregivers were concerned about the informational privacy of their care recipient with dementia, information overload, and ethical issues related to dehumanizing care. Identified demands mainly centered around how to overcome these barriers. We identified several demands related to specific functionalities, user experience factors, services surrounding the technology, and integration into the existing work context. Most notably, caregivers highlighted the importance of introducing AI-driven in-home monitoring technologies in a way it prevents them from feeling undervalued. In conclusion, our findings can help to inform the development of more acceptable and unobtrusive in-home monitoring technologies to support home-based dementia care.

WHAT FACTORS ARE ASSOCIATED WITH FACILITATING CONDITIONS TO USE GERONTECHNOLOGY?

Hayoung Park,[1] Susanna Joo,[2] DaeEun Kim,[1] YoonMyung Kim,[1] and Hey Jung Jun,[1] *1. Yonsei University, Seoul, Seoul-t'ukpyolsi, Republic of Korea, 2. Yonsei University, Seodaemun-gu, Seoul-t'ukpyolsi, Republic of Korea*

The purpose of this study is to explore relevant factors associated with facilitating conditions to use gerontechnology among Korean older adults. The sample was 310 Korean older adults aged 65 and above without cognitive impairment who participated in an online survey. The facilitating conditions to use gerontechnology were measured by the sum of five questions about basic knowledge, available help, financial resources, accessibility, and social influences of using gerontechnology from the Senior Technology Acceptance Model (STAM). Possible relevant factors comprised socio-demographic characteristics, physical and mental health, environmental factors, and social relationships. The results from the linear regression analyses showed that employment status, household income, cognitive function, social activity participation, and support from friends or neighbors were significantly associated with facilitating conditions to use gerontechnology. Older adults who are employed, have higher household income, have better cognitive functions, participate more in social activities, and receive higher levels of support from friends or neighbors tend to be in more facilitating conditions to use gerontechnology. The findings from this study imply the necessity of facilitating conditions to use gerontechnology as social policies for older adults who are unemployed, have lower household income, have worse cognitive functions, and have fewer social resources. This study is meaningful in that it has empirically explored various factors related to facilitating conditions to use gerontechnology for older adults based on the STAM. Future studies are needed to explore significant factors associated with facilitating conditions to use gerontechnology via various contexts.

WHO MATTERS FOR THE SUBJECTIVE PERCEPTIONS TOWARD GERONTECHNOLOGY?

Susanna Joo,[1] Seong Hee Kim,[2] Changmin Lee,[3] Chang Oh Kim,[4] Yun Mook Lim,[3] and Hey Jung Jun,[3] *1. Yonsei University, Seodaemun-gu, Seoul-t'ukpyolsi, Republic of Korea, 2. Sungkyunkwan University, Seoul, Republic of Korea, 3. Yonsei University, Seoul, Seoul-t'ukpyolsi, Republic of Korea, 4. Severance Hospital, Yonsei University College of Medicine, Seoul, Seoul-t'ukpyolsi, Republic of Korea*

The present study aims to investigate how personal relationship satisfaction moderate the associations between types of social support providers and the subjective perceptions toward gerontechnology among Korean older adults. Data were collected by an online survey in February 2021. The sample was 256 older Koreans who have a partner and children (N=109 older adults with low personal relationship satisfaction, N=147 older adults with high personal relationship satisfaction, Age: 66-88, M=69.91, SD=4.19). The dependent variables for the subjective perceptions toward gerontechnology were attitude toward using gerontechnology and anxiety for gerontechnology. Independent variables were four types of social support providers (spouse, children, siblings/relatives, and friends/neighbor). Personal relationship satisfaction was a binary moderator, dividing the sample into low and high personal relationship satisfaction groups. We applied multigroup structural equation modeling. The results showed associations between social support providers and subjective perceptions toward gerontechnology differed by the quality of personal relationships. In detail, receiving support from spouses was associated with the lower level of anxiety of using gerontechnology among older adults in the low personal relationship satisfaction group. Moreover, receiving support from spouses was associated with a higher level of attitude toward using gerontechnology in the high personal relationship group. Receiving social support from other providers were not significant in both groups. The findings imply that the partner living with was salience for positive perception toward gerontechnology. Furthermore, support from spouses may differently work on the subjective perception toward gerontechnology by the quality of personal relationships.

Session 9085 (Poster)

Biology of Aging

AGE-RELATED PHENOTYPES LINKED TO ABERRANT EXPRESSION AND LOCALIZATION OF A TELOMERIC PROTEIN

Amanda Stock,[1] Kun Wang,[1] Chengyu Liu,[2] Ross McDevitt,[1] Chongkui Sun,[1] Yi Gong,[1] and Yie Liu,[1] *1. National Institute on Aging, Baltimore, Maryland, United States, 2. National Heart, Lung, and Blood Institute, Bethesda, Maryland, United States*

Telomere attrition is associated with telomere biology disorders and age-related diseases. In telomere biology disorders, telomere uncapping induces a DNA damage response that evokes cell death or senescence. However, a causal mechanism for telomere attrition in age-related diseases remains elusive. Telomere capping and integrity are maintained by shelterin, a six-protein complex. Rap1 is the only shelterin member that is not required for telomere capping and is expressed at non-telomeric genomic and cytosolic regions. The objective of this study was to determine aberrant phenotypes

attributed to non-telomeric Rap1. To test this, we generated a Rap1 mutant knock-in (KI) mouse model using CRISPR/Cas9 editing, in which Rap1 at telomeres is prevented, leaving only non-telomeric Rap1. Cell fractionation/western blotting of primary fibroblasts from Rap1 KI mice demonstrated decreased Rap1 expression and Rap1 re-localization off telomeres, with an altered cellular distribution. This same difference in Rap1 is also observed in human cells with telomere erosion, indicating that aberrant Rap1 in our model may recapitulate Rap1 in aging and human telomere biology disorders. Compared to wild-type control mice, Rap1 KI mice exhibited increased body weight, altered cytokine levels, behavioral deficits, and decreased lifespan. In conclusion, our results reveal a novel mechanism by which telomere shortening may contribute to age-related pathologies by disrupting Rap1 expression and cell localization.

APOLIPOPROTEIN E IMPAIRS AGED BONE FRACTURE HEALING

Abhinav Balu,[1] Rong Huang,[1] Kristin Molitoris,[1] and Gurpreet Baht,[2] *1. Duke Molecular Physiology Institute, Durham, North Carolina, United States, 2. Duke University, Durham, North Carolina, United States*

Bone fracture healing and osteoblast differentiation are impaired with advanced age. Using a combination of parabiosis and proteomic models, we identified apolipoprotein E (ApoE) to be an aging factor in bone regeneration. Circulating levels of ApoE increased with age in patients and in mice. ApoE impaired bone fracture healing by decreasing bone deposition in the fracture callus which subsequently decreased the mechanical strength of healed tissue. Osteoblasts serve as the sole bone forming cells within the body. In tissue culture models, ApoE treatment decreased osteoblast differentiation and activity which led to decreased matrix formation and mineralization. This inhibition of osteoblast differentiation relied on down-regulation of the Wnt/β-catenin pathway. In mouse models, aged bone repair was rejuvenated when we lowered circulating ApoE levels using a hepatotropic AAV-siRNA model – serving as a proof of concept that ApoE can be targeted to improve bone repair in an older population. While promising, knockdown of circulating ApoE in such a fashion is likely not translatable to patient care. Thus, current work in our laboratory is focused on developing treatment strategies that temporally decrease circulating ApoE levels and consequently improve bone healing after acute injury and/or surgical orthopedic procedure in the geriatric population.

BDNF SNP C270T MODIFIES THE ASSOCIATION BETWEEN HISTORY OF HEAD INJURY AND COGNITIVE STATUS IN OLDER ADULTS

Mikaela Drewel,[1] Hector Gonzalez,[1] Gail Rattinger,[2] Joshua Matyi,[1] Alexandra Hammond,[1] Kaitlyn Kauzor,[1] Mona Buhusi,[1] and JoAnn Tschanz,[1] *1. Utah State University, Logan, Utah, United States, 2. Binghamton University, Binghamton University, New York, United States*

Brain derived neurotrophic factor (BDNF), is a neurotrophin involved in neurogenesis and neuroplasticity. Several BDNF genes have been associated with cognitive function. Studies suggest head injury (HI) alters BDNF levels, and activities enhancing BDNF signaling promote better cognitive outcomes. We investigated the relationship between HI and BDNF single-nucleotide polymorphisms (SNPs) in predicting cognitive performance in a population-based sample of older adults. 4165 participants (56.7% female), dementia-free at baseline, were assessed triennially [follow-up years: mean (SD) = 5.85 (4.20), median = 7.33, maximum = 11.39]. Mean (SD) age was 75.36 (6.84). Cognition was assessed using the Modified Mini-Mental State Exam (3MS) and HI history from self-report. We examined interactions between BDNF SNPs [rs56164415 (BDNF C270T), rs6265 (Val66Met), rs2289656 (BDNF receptor trkB), and rs2072446 (NGF/BDNF receptor p75)] and history of HI (none, one, or multiple) in predicting cognitive decline. Covariates included age, education, sex, and apolipoprotein (APOE) E4 allele presence. Linear mixed-effect models indicated BDNF C270T significantly modified the association between HI and cognitive status ($p < .006$). Specifically, minor T allele carriers with single or multiple HI scored on average 2.08 and 3.21 points lower on the 3MS, respectively, than non-T carriers with no HI. Unexpectedly, there was a trend for APOE4*HI ($p = .078$) in that APOE E4 carriers with multiple HI scored higher than those lacking APOE E4 and HI. In this population-based sample, rs56164415 predicted cognitive outcomes that varied by history of HI. Factors influencing BDNF signaling may provide a potential avenue for intervention in recovery from HI.

BIOLOGICAL AGING, MORTALITY, AND ALZHEIMER'S DISEASE RELATED BIOMARKERS FROM MIDLIFE TO OLD AGE

Carol Franz, Erik Buchholz, Amy Yongmei Qin, Xin Tu, and William Kremen, *University of California San Diego, La Jolla, California, United States*

People age at different rates and in different biological systems that may differentially contribute to accelerated decline. Better understanding of biological aging may contribute to identification of better targets for intervention. In 1005 VETSA participants we created 3 indicators of biological age: physiological age (PA), frailty, and brain age. PA included hemoglobin, glucose, lipids, height, weight, waist, systolic and diastolic blood pressure, and age. PA was calculated using the Klemera and Doubal (2006) method. The frailty index summed 37 health deficits (Jiang et al. 2017). A machine learning algorithm was used to estimate brain age across cortical and subcortical regions (Liem et al, 2017); predicted brain age subtracted from chronological age comprised the predicted brain age difference score (PBAD). Frailty and PBAD were calculated at waves 1, 2 and 3 when participants were average age 56, 62, and 68, respectively. PA markers were only available at waves 2 and 3. Outcome measures included mortality by wave 3 and scores on AD-related plasma biomarkers—Neurofilament light (NFL), Tau, and AB40 and AB42 at wave 3. Frailty at wave 1 and 2 predicted mortality. Frailty at wave 1 was significantly associated with wave 3 NFL, AB42 and AB40. Wave 2 & 3 frailty was associated with all biomarkers. Neither PA nor PBAD predicted biomarkers or mortality. The results are striking given the relatively young age of the sample. Even as early as one's 50s, frailty in a community-dwelling sample predicted accelerated decline and mortality when the outcome age was only 66-73.