function measures and expanded sociodemographic information significantly improves the performance of the VES-13-HOS 2.5. Using Medicare HOS data, we developed risk scores that used coefficients from three logistic regressions predicting two-year mortality (2013-2015): (1) standard 0-10 VES-HOS 2.5 inputs at 2013 (function and limited demographics), (2) expanded demographics at 2013 (adding gender, fine-grained age, race/ethnicity, marital status, missing income indicator, and Medicaid status), (3) expanded demographics at 2013 plus change in pre-baseline (2011) health score two years prior. Fine-grained age and sociodemographic information slightly improve VES mortality prediction. Holding the 2013 VES-HOS 2.5 0-18 enhanced-demographic risk score constant, seniors with worse 2011 than 2013 functioning had higher two-year mortality than seniors with better 2011 functioning. Adding this prior health status further improved model performance slightly- 80% of mortality prediction is explained by "current" health and function and 20% by status two years earlier; such weighted scoring could be employed. We find that prior health status measurements do not generally indicate a trajectory that is likely to continue. Rather, health and function information from two years prior reduces measurement error via a second assessment of health; those with much worse health and function two years earlier are at slightly higher mortality risk. The VES-HOS can be used to identify patients with high mortality risk and to guide their care.

SESSION 525 (SYMPOSIUM)

EXPANDING THE NETWORK: NONTRADITIONAL ANIMAL MODELS IN GEROSCIENCE

Chair: Alan A. Cohen, *University of Sherbrooke, Sherbrooke, Quebec, Canada*

Important insights into the biology of aging are coming from research on animals that have not been traditional staples of geroscience research. This symposium will highlight cutting-edge approaches to understand aging biology in the African killifish, exceptionally long-lived mammals such as the Naked Mole Rat, and across primate species, including the short-lived Marmoset.

CONSERVATION OF INTEGRATIVE PHYSIOLOGICAL AGING MECHANISMS ACROSS PRIMATES

Alan A. Cohen,[1] Tina W. Wey,[1] Gabriel Dansereau,[1] Emy Roberge,[1] Véronique Legault,[1] Marie Brunet,[1] Joseph W. Kemnitz,[2] and Luigi Ferrucci[3], *1. Université de Sherbrooke, Sherbrooke, Quebec, Canada, 2. University of Wisconsin, Madison, Wisconsin, United States, 3. NIH, Baltimore, Maryland, United States*

Physiological dysregulation (PD) and integrated albunemia (IA) are organism-level aging mechanisms that can be measured using standard biomarkers, and in humans they have been shown to increase with age and predict health outcomes. Here, we use 10 species from the Internet Primate Aging Database (iPAD), a longitudinal database of biomarkers and mortality in captive primates, to analyze the generalizability of the role of PD and IA in aging, as well as the conservation of the underlying physiology. Human patterns are broadly but not universally replicated in primates. For example, PD increases with age in nine of eleven species, and predicts mortality in three of four. Both IA and PD can to some extent be cross-calibrated across species, indicating surprising conservation of underlying homeostatic norms; in the case of PD, the calibration weakens with phylogenetic distance.

MECHANISMS OF LONGEVITY: LESSONS FROM LONG-LIVED MAMMALS

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Animals have evolved a dramatic diversity of aging rates with lifespans ranging from 2 years to 200 years. This natural diversity of lifespan can be exploited to understand the mechanisms of longevity and develop anti-aging interventions. Our goal is to identify mechanisms that allow such exceptionally long-lived animals to live long and healthy lives and then use these mechanisms to benefit human health. Naked mole rat is the longest-lived rodent with the maximum lifespan of 32 years. We discovered that the mechanism of longevity and cancer resistance in the naked mole rat mediated by high molecular weight hyaluronan. I will discuss the mouse model we generated that mimics the naked mole rat and shows increased healthspan and lifespan. I will also the role of SIRT6 in mediating longevity across mammals and in human centenarians by improving DNA repair and silencing transposable elements.

GENOME-WIDE RELAXATION OF SELECTIVE CONSTRAINTS UNDERLIES THE EVOLUTION OF SHORT LIFE SPAN IN AFRICAN KILLIFISHES

Dario Riccardo Valenzano,[1] and Rongfeng Cui[2], *1. Max Planck Institute for Biology of Ageing, Cologne, Germany, 2. Max Planck Institute for Biology of Ageing, Cologne, Nordrhein-Westfalen, Germany*

African killifishes independently evolved annual life cycles at least three times, offering a unique natural experiment of diversification of life history strategies. Using a comprehensive whole-genome sampling of 46 species of African killifishes, we found that genome size correlates with annual life style and climate. Annual species underwent genome-wide expansion of transposable elements, higher gene family turn-over rates and relaxed selection in genes in known aging pathways, such as mitochondrial replication and translation, mTOR pathway and DNA repair. Whole-genome resequencing in wild Nothobranchius populations showed bottle-necks and a genome-wide signature of relaxation of selection in populations evolved in dryer climates. In conclusion, evolution in ephemeral environments in African killifishes caused an extensive relaxation of selective constraints at genome-wide level. We discovered that, in African killifishes, ecology drove the evolution of short life span, associated to tens of thousands of slightly deleterious mutations driven to intermediate to high frequencies.

MARMOSET MONKEYS AS A MODEL OF AGING

Suzette Tardif,[1] and Corinna Ross[1], *1. Southwest National Primate Research Center, San Antonio, Texas, United States*

Interest in the New World Monkey, the common marmoset, as a nonhuman primate aging model is growing. Because marmosets have a fast maturation and short life span compared with more commonly used Old World monkey models, the aging research community began to explore the potential of this model species. In addition, the relative ease with which marmosets can be bred in a barrier