sensory stimuli to entrain neural oscillations at gamma frequencies leads to a reduction of amyloid and Tau pathology in AD mouse models. I will discuss the potential mechanisms by which sensory gamma entrainment elicits it's neuroprotective effects.

### DYSREGULATION OF LYMPH NODE FUNCTION CRITICALLY AFFECTS IMMUNE AGING

J. Nikolich-Zugich, *Department of Immunobiology, University of Arizona, Tucson, Arizona, United States*

Adaptive immune system effects precise defense against a highly diverse array of microorganisms. For defense against new infections, the organism deploys naïve, previously antigen-unexposed, T and B lymphocytes, whose antigen-specific receptors recognize, and eventually orchestrate the removal of, the invading microorganisms. Naïve B, and even more so T, lymphocytes numerically diminish with aging. However, new data suggests that those that remain appear to have maintained their functional potential, contrary to an earlier dogma. To investigate cell-extrinsic defects in immunity, we studied aging of lymph nodes, including alteration in their architecture and stromal cell integrity, as well as changes in circulating factors. We will discuss how these components critically modulate both homeostasis and function of the aging immune system.

### IMPAIRMENT OF AN ENDOTHELIAL NAD+-H2S SIGNALING NETWORK IS A REVERSIBLE CAUSE OF VASCULAR AGING

M.S. Bonkowski[1], A. Das, PhD[2], M.B. Schultz, BS[3], Y. Lu[4], J. Mitchell, PhD[5], L. Wu, PhD[6], L. Guarente, PhD[7], D.A. Sinclair, PhD[8], *1. Harvard Medical School, Cambridge, Massachusetts, United States, 2. Laboratory for Ageing Research, Department of Pharmacology, School of Medical Sciences, The University of New South Wales, Sydney, NSW 2052, Australia, 3. Michael B. Schultz, Harvard Medical School, Boston, MA, USA, 4. Paul F. Glenn Center for the Biological Mechanisms of Aging, Department of Genetics, Harvard Medical School, Boston, MA, USA, 5. Department of Genetics and Complex Diseases, Harvard T.H. Chan School of Public Health, Boston, MA, USA, 6. Laboratory for Ageing Research, Department of Pharmacology, School of Medical Sciences, The University of New South Wales, Sydney, Australia, 7. Primary Affiliation, MIT, Department of Biology, Cambridge, MA, USA, 8. Paul F. Glenn Labs for the Biology of Aging, Harvard Medical School, Boston, MA, USA*

With aging there is a notable decline in capillary density and blood flow contributing to mortality and morbidity. The use of NAD+ boosters to reverse aspects of aging, is in part, through the mechanism of activating sirtuin deacylases (SIRT1–SIRT7) that mediate the benefits of exercise and calorie restriction (CR). We show here that SIRT1 in endothelial cells is a key mediator of pro-angiogenic signals secreted from myocytes. Treatment of mice with the NAD+ precursor nicotinamide mononucleotide (NMN) improves blood flow and increases endurance in advanced aged mice by promoting SIRT1-dependent increases in capillary density, an effect augmented by exercise or increasing the levels of hydrogen sulfide (H2S), a CR mimetic and regulator of endothelial NAD+ levels. These findings have implications for improving blood flow to organs and tissues, increasing performance, and reestablishing a virtuous cycle of mobility in aged individuals.

## SESSION 2530 (SYMPOSIUM)

### VARIABILITY AND REGULATION IN STRESSOR ECOLOGIES

Chair: S.D. Neupert, *North Carolina State University, Raleigh, North Carolina*
Co-Chair: J.A. Bellingtier, *Friedrich-Schiller-Universität Jena, Jena, Thuringen*
Discussant: D.M. Almeida, *The Pennsylvania State University, State College, Pennsylvania*

Emotional reactivity to stressors is an important process to understand how stress affects health and well-being. Using four different datasets designed to target the nuances of stressor exposure and its effects on aging-related health and well-being outcomes, this symposium will uncover the roles of stressor type, domain, duration, frequency, and timing on various naturalistic ecologies. Specifically, Scott et al. examined the intersection of memory lapses as stressors in the ecology of cancer survival. Compared to a sample without cancer, breast cancer survivors were at greater risk for memory lapses, but were more emotionally resilient to them when they did occur. Zhang et al. applied an in-person microlongitudinal design to detect the unique contribution of daily stressors to perceptions of daily control within the context of physical health, emotion, and cognition. Witzel et al. examined various types of daily social stressors (arguments, avoided arguments, or network stressors), whether stressors were resolved or ongoing, and their association with daily negative affect. Using the second wave of the National Study of Daily Experiences, participants were emotionally reactive to all examined stressors and emotional reactions were significantly greater for unresolved arguments. Bellingtier et al. used an experience sampling approach in an adult lifespan sample to examine age-related differences in post-stressor negative affect when various emotion regulation strategies were implemented (e.g., positive reappraisal). Age-related differences in reactivity varied based on regulation strategy and stressor timing. David Almeida, discussant, will integrate the individual presentations, highlighting key themes and making suggestions to further push the field forward.

### MEMORY FAILURES IN DAILY LIFE AMONG MIDDLE AGED WOMEN WITH AND WITHOUT BREAST CANCER HISTORY

S.B. Scott[1], J. Mogle, Ph.D.[2], B.J. Small, Ph.D.[3], M.J. Sliwinski, Ph.D.[4], *1. Stony Brook University, Stony Brook, New York, United States, 2. College of Nursing, Pennsylvania State University, University Park, PA, 3. School of Aging Studies, University of South Florida, Tampa, FL, 4. Department of Human Development & Family Studies, Pennsylvania State University, University Park, PA*

"Chemo-brain" (post-chemotherapy cognitive impairment) is a concern among cancer survivors. The memory lapses (i.e., keys, names, reason for entering room) survivors experience may function as stressors and increase negative mood. We compared breast cancer survivors (N=47, Mage=53.0) and an age-matched sample of women without cancer history (N=91, Mage=51.8) on their exposure to memory lapses and related changes in negative affect (NA) for 14 days. Results indicated that survivors were significantly more likely to report a memory lapse (OR=1.70,