

collaborates with local healthcare providers to improve outreach, education, and care, and assesses service needs and resources via surveys in LAC. The program engages in community-based participatory research to provide real-world solutions for improving health outcomes and build community research capacity. This presentation will highlight AAAE's community-based approach to raising awareness, increasing knowledge and access to healthcare resources, and improving health outcomes for older African Americans and their families.

COMMUNITY-ENGAGED RESEARCH OF OLDER PACIFIC ISLANDER ADULTS: RESULTS FROM THE PIHS AND THE NHPI NHIS

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Despite the well-established need to measure and address the growing issue of disparities among older minority populations, little is known about the prevalence and correlates of disability, morbidity, and mortality among older US Pacific Islander adults. This paper discusses culturally appropriate approaches for conducting evidence-based research on a representative probability sample of older Native Hawaiian and Pacific Islander adults interviewed as part of the Pacific Islander Health Study and Native Hawaiian and Pacific Islander National Health Interview Survey. Important strategies that increase response rates and respondent participation when engaging this multi-ethnic and culturally diverse special population in research are highlighted. The model describes successful methodologies that combine CBPR approaches of community engagement with more traditional survey design methods. The findings from this work emphasizes the importance of representative data on hard-to-survey populations to illustrate granular differences in health outcomes within underrepresented populations that are not reflected in national health surveys.

WORKING WITH COMMUNITIES TO SUPPORT MINORITY CAREGIVERS: THE PRISMA HEALTH REACH EXPANSION PROJECT

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In 2019, the NIH presented the results of its two-year visioning process to advance the science of minority health and health disparities. The PRISMA Health REACH Expansion (PH-REACH E) is an innovative, community-academic partnership between a hospital memory clinic, meal delivery service, research university, and low-income health clinic. The purpose is to: 1) increase the dementia capability of community-based programs, 2) offer caregivers of persons with dementia the REACH intervention, and 3) identify and connect racial minority and/or rural residents with services to promote health and well-being in older adulthood. This presentation will detail the PH-REACH E framework and present program results, which include improved caregiver outcomes (e.g., reduced burden, increased self-efficacy, reduced depression) and enhanced dementia capability (e.g., increased

dementia knowledge) of partner organizations. This program illustrates some key recommendations of the NIH – community engagement in intervention adaptation, multisectoral collaboration, and promoting systems-level change to reduce health disparities.

SESSION 7665 (SYMPOSIUM)

THE GEOMETRIC FRAMEWORK FOR NUTRITION: NEW INSIGHTS INTO HOW WHAT WE EAT AFFECTS HOW WE AGE

Chair: Alan Cohen

Co-Chair: David Raubenheimer

The geometric framework for nutrition (GFN) is an approach to understanding the effect of nutrition considering multiple nutrients simultaneously. Originally developed in experimental studies of insects to model how nutritional needs evolve depending on ecological context, and since extended to many taxa including non-human primates in the wild, the technique is increasingly applied to understand human health and aging. Here, we invite four varied talks showcasing the flexibility and potential of this approach from the basic biology of aging to observational human studies and clinical trials. D. Raubenheimer will give an overview of the method, its history, and its applications in aging and human health. D. Wahl will present results showing how GFN can help develop diets that recapitulate caloric restriction and its effects on brain aging. S. Das will show how GFN can be used to improve the feasibility of caloric restriction in humans without compromising its effects. Finally, A. Cohen will present results showing how GFN can be deployed in an epidemiological context and used to characterize complex interactions among large numbers of nutrients in determining health. Together, these results show that a simplistic conception of nutrition as calories is far from sufficient to understand its effects on health and aging. Evolution has shaped the nutritional needs of each species for its environment, with appropriate levels of flexibility. GFN provides an approach to capture the relevant nuance, with the results presented at this symposium but scratching the surface. Nutrition Interest Group Sponsored Symposium.

NUTRIENT INTAKE PATTERNS PREDICT HOMEOSTATIC DYSREGULATION IN AN OLDER QUEBEC POPULATION

Alan Cohen,¹ Alistair Senior,² Véronique Legault,³ David Raubenheimer,⁴ Stephen Simpson,² Nancy Presse,⁵ Pierrette Gaudreau,⁶ and David Le Couteur,² *1. Université de Sherbrooke, St-Denis-de-Brompton, Quebec, Canada, 2. University of Sydney, Camperdown, New South Wales, Australia, 3. Université de Sherbrooke, Sherbrooke, Quebec, Canada, 4. University of Sydney, Sydney, New South Wales, Australia, 5. University of Sherbrooke, Sherbrooke, Quebec, Canada, 6. University of Montreal, Montreal, Quebec, Canada*

The geometric framework for nutrition has largely been applied to macronutrients in experimental settings. Here, we utilize the framework to examine both macro and micronutrient intake patterns in observational human

data. We used nutritional intake patterns (3x 24h recall per visit) of 1754 older Quebecers from the NuAge cohort to predict multi-system homeostatic dysregulation scores calculated from 30 biomarkers. Intermediate intake of both macro- and micronutrients was generally associated with lower dysregulation scores (i.e., better health). Furthermore, there were often nutrient-nutrient interactions, such that the optimal level of one nutrient depends on the intake level of others. However, higher protein intake was generally associated with better health, and results varied substantially across different dysregulation systems. Accordingly, even though nutrition does have important effects on health trajectories during aging, it will be challenging to arrive at population-level recommendations to fine-tune nutrient intake patterns to optimize health beyond “everything in moderation.” Part of a symposium sponsored by the Nutrition Interest Group.

NUTRITIONAL ECOLOGY, NUTRITIONAL GEOMETRY, AND AGING RESEARCH

David Raubenheimer,¹ Stephen Simpson,² and David Le Couteur,² 1. *University of Sydney, Sydney, New South Wales, Australia*, 2. *University of Sydney, Camperdown, New South Wales, Australia*

Substantial advances have been made in understanding both evolutionary and mechanistic aspects of biological ageing, but the two areas remain poorly integrated. I suggest that a greater emphasis on ecology can help to integrate evolutionary and mechanistic research on ageing, by providing insight into the interface between biological mechanisms and the environments in which they evolved. Among the most salient aspects of the environment relevant to ageing is nutrition. And yet in the bulk of ageing research nutrition is coarsely represented as dietary restriction or caloric restriction, without consideration for which components of the diet or which energetic substrates are driving the observed effects. I show how a method developed in nutritional ecology, called the nutritional geometry framework, can help to understand the nutritional interactions of animals with their environments, by explicitly distinguishing the roles of calories, individual nutrients and nutrient balance. Part of a symposium sponsored by the Nutrition Interest Group.

COMPARING THE EFFECTS OF LOW-PROTEIN AND HIGH-CARBOHYDRATE DIETS AND CALORIC RESTRICTION ON BRAIN AGING IN MICE

Devin Wahl,¹ David Raubenheimer,² Rafael de Cabo,³ David Sinclair,⁴ Stephen Simpson,⁵ Samantha Solon-Biet,⁶ and David Le Couteur,⁵ 1. *Colorado State University, Fort Collins, Colorado, United States*, 2. *University of Sydney, Sydney, New South Wales, Australia*, 3. *National Institute on Aging, Bethesda, Maryland, United States*, 4. *Paul F. Glenn Center for Biology of Aging Research at Harvard Medical School, Boston, Massachusetts, United States*, 5. *University of Sydney, Camperdown, New South Wales, Australia*, 6. *University of Sydney, Sydney, New South Wales, Australia*

The Geometric Framework for Nutrition (GFN) has revealed that ad-libitum low-protein, high-carbohydrate

(LPHC) diets improve cardiometabolic health and extend lifespan in rodents, but it is not known whether these diets are also beneficial for brain health. Here, we utilized previous results from GFN studies and compared hippocampus biology and memory in mice subjected to 20% calorie restriction (CR) or provided ad-libitum access to several LPHC diets. RNA expression in the hippocampus of 15-month-old mice were similar between mice fed CR and LPHC diets. Nutrient-sensing proteins, including SIRT1, MTOR, and PGC1-alpha, were also influenced by diet; however, the effects varied by sex. CR and LPHC diets were associated with increased dendritic spines in dentate gyrus neurons. Mice fed CR and LPHC diets had modest improvements in the Barnes maze spatial recognition memory paradigm and novel object recognition test. LPHC diets recapitulate some of the benefits of CR on brain aging. Part of a symposium sponsored by the Nutrition Interest Group.

DIET COMPOSITION, ADHERENCE TO CALORIE RESTRICTION, AND CARDIOMETABOLIC DISEASE RISK MODIFICATION

Sai Krupa Das,¹ Alistair Senior,² Rachel Silver,³ Cheryl Gilhooly,³ and David Le Couteur,² 1. *Tufts University, Boston, Massachusetts, United States*, 2. *University of Sydney, Camperdown, New South Wales, Australia*, 3. *Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University, Boston, Massachusetts, United States*

Calorie restriction (CR) is a promising strategy to attenuate age-related disease risk. Higher protein diets enhance satiety but may also impair metabolic health and accelerate aging. The effect of higher protein intake on adherence to CR and cardiometabolic markers of healthspan remains unknown. We used the Geometric Framework for Nutrition to examine the association between diet composition and 1) CR adherence; and 2) cardiometabolic risk factors during a 2-year intervention. The CR group consumed higher percentage energy from protein and lower fat at 12 months compared to baseline (logit % protein=0.1; 95% CI=0.05, 0.15; logit % fat= -0.12; CI=-0.29, -0.18). Higher protein intake over the 2-year intervention was associated with higher adherence to CR. No effect of diet composition on cardiometabolic risk factors was observed. These findings suggest that dietary protein plays a critical role in adherence to CR with no adverse effects on cardiometabolic markers of healthspan. Part of a symposium sponsored by the Nutrition Interest Group.

SESSION 7670 (SYMPOSIUM)

THE INTERSECTIONALITY OF AGEISM

Chair: Paul Nash
Co-Chair: Tonya Taylor
Discussant: Becca Levy

Ageism is unlike any other form of prejudice in that, all things being equal, we are all at risk of experiencing it as we age. Whilst this stands true, many communities experience discrimination in other domains such as gender, race,