Pennington Biomedical
Nutrition Obesity
Research Center

# Pennington/Louisiana NORC Newsletter

## In This Issue:



## Note from the Director


**Eric Ravussin PhD**
Boyd Professor

Assoc. Executive Director
for Clinical Science

Pennington Biomedical
Research Center


All the Nutrition Obesity Research Centers (NORCs) across the country are funded by the NIDDK/NIH. Their mission is to integrate, coordinate, and foster interdisciplinary basic, clinical, and public health research related to nutritional science and issues of obesity. To further advance this goal NIH along with the NORCs is now focusing more on Diversity, Equity, and Inclusion (DEI) as well as Health Disparities Research. Towards these goals, NIH now often provides resources to reach new levels by encouraging innovative, science-driven thinking made possible by broadening the diversity of thought that comes with a diverse scientific workforce. Scientists and trainees from diverse backgrounds and life experiences bring different perspectives, creativity, and individual enterprise to address complex scientific problems.

There are many benefits that flow from a diverse NIH-supported scientific workforce, including: fostering scientific innovation, enhancing global competitiveness, contributing to robust learning environments, improving the quality of the researchers, advancing the likelihood that underserved or health disparity populations participate in, and benefit from health research, and enhancing public trust.

In this special issue of our Pennington/Louisiana NORC, we have highlighted three NIH resources which have allowed our NORC to work towards this goal of Diversity, Equity, and Inclusion in nutritional and obesity science:

1. Dr. Ursula White was chosen from the Pennington/Louisiana NORC to participate as a member of a NORC Executive Committee Working Group on Diversity, Equity, and Inclusion.
2. The Pennington/Louisiana NORC was awarded supplemental funds to provide a Pilot & Feasibility grant for Underrepresented Minorities which allowed us to fund 3 pilot grants.
3. Award of a grant for the LAUNCHED program

# DEI Working Group Update

**Ursula White PhD**
Assistant Professor

Physiology of Human
Adipose Tissue Laboratory

Pennington Biomedical
Research Center

The Nutrition Obesity Research Centers (NORCs), supported by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), have endeavored to identify the barriers and challenges to success of scientists from underrepresented groups in academia (URiA). They also endeavor to implement actionable strategies and best practices across all the NORCs to help overcome these challenges and support diversity, equity, and inclusion in the biomedical research workforce in the fields of obesity and nutrition. A NORC Executive Committee on Workforce Diversity has assembled a trans-NORC Working Group on Diversity, Equity, and Inclusion (DEI Working Group), which is comprised of representatives from each of the NORCs, to lead these efforts. Dr. Ursula White was identified and selected from the Pennington/Louisiana NORC as the Early Career Scholar to collaborate with and advise the DEI Working Group.

One of the first initiatives for the group was to successfully develop and disseminate detailed surveys to the NORC directors and members to collect essential data on demographics, mentorship, funding, career development and support, current NORC (and DEI) initiatives at each institution, and aspirations for future NORC efforts. The results from these surveys have been collected, and final data analysis and manuscript preparations are in progress. The data collected will be useful not only to provide critical information on current efforts to support URiAs but also to inform future NORC efforts and initiatives of the DEI Working Group. The Executive Committee has recently revamped the NORC Central website to include a DEI and Health Disparities Research link with access to valuable resources, including training and professional development, awards, and funding opportunities. Quarterly meetings of the DEI Working Group have been productive and yielded valuable discussions about DEI issues. In-progress and future initiatives include implementing mentor training across the NORCs, attaining equity in the P&F programs, and determining how best to identify post-docs and new faculty members from URiA. With guidance from the survey data and input from each NORC, the DEI Working Group will continue to brainstorm and implement approaches to successfully address the objectives set forth.

# Pilot & Feasibility Awards

The objective of the NORC P&F program is to encourage young investigators by providing research support to test innovative hypotheses involving nutritional related research. Below are winners of our P&F grants for Underrepresented Minorities.

## Virtual Reality Nutrition Education Intervention in College Students: A Pilot Study on End-User Knowledge and Behaviors

**Melissa Johnson, PhD**
Assistant Professor

Department of Family &
Consumer Science

Southern University and
A&M College

In 2001 the U.S. Surgeon General issued a “Call to Action” to prevent and decrease overweight and obesity due to the designation of obesity as a nationwide epidemic of public health significance. However, over 20 years later the rates of obesity in the U.S. have steadily increased. The current covid-19 pandemic has further exacerbated the obesity

epidemic. Lower socioeconomic status, Black race/ethnicity and physical inactivity are all significant predictors of obesity. Furthermore, African American college students attending a Historically Black College and University (HBCU) are more likely to be food insecure and overweight and/or obese in comparison to other ethnicities. This multilayer complexity of risk among college students, significantly emphasizes the urgency of active investment and engagement in research methodologies to address this challenge. Within our current technological age, there exists the opportunity to utilize technology to create a platform that will actively engage end-users and potentially reduce the prevalence of overweight and/or obesity.

In this NORC Pilot and Feasibility study, we will examine the use of a virtual reality (VR) platform to deliver nutrition education to college students. We hypothesize that our customized VR software will safely and effectively deliver nutrition education to college students and will result in improved nutrition knowledge, dietary intake, and dietary behaviors. The use of VR offers an innovative approach to addressing several preventable causes of obesity – nutrition knowledge, sensitivity to the food environment, and dietary behaviors. As a dynamically evolving technology, VR offers the user the ability to interact, engage, and be fully immersed in the virtual experience. Although not a novel technology, the use of VR for the potential diagnosis, treatment, management, and prevention of disease offers promise as a novel component of a comprehensive care plan. Findings of this study will provide foundational data to support the more personalized delivery of nutrition education, which considers factors such as culture, education, and individual characteristics.

Our multidisciplinary research team, consisting of researchers from Southern University and A&M College and the University of Illinois at Urbana-Champaign (UIUC), is excited to build our relationship with the PBRC NORC to achieve the goals of the research project and future research projects in the area of nutrition and cardiometabolic health. We believe that sustained collaborations across disciplines and institutions are essential in mitigating health disparities in order to support and protect public health.

## Nutritional Strategies to Enhance Lung Function in Asthmatics with Obesity

**Jacob T. Mey, PhD, RD**
Assistant Professor

Integrated Physiology & Molecular Medicine Lab

Pennington Biomedical Research Center

Obesity increases the risk for asthma, which is a major cause of hospitalizations and reduced health span. Emerging evidence and our preliminary data suggest asthma pathophysiology includes altered nutrient metabolism. Nutrition approaches are important for managing altered nutrient metabolism. However, studies on diet in asthma have focused on food allergies or inflammation, while the effect of altering nutrient metabolism remains to be elucidated.

Three distinct dietary strategies show promise for improving clinical outcomes in asthma, including asthma control and lung function. 1) Epidemiologic associations suggest a diet aligning with the Dietary Guidelines for Americans improves asthma control. 2) Clinical reports suggest ketogenic approaches improve lung function. 3) We have shown that supplementing the diet with medium chain triglycerides, which inherently increase circulating ketones, improves asthma control. Still, a lack of evidence from well-controlled randomized clinical trials has prevented the advancement of nutrition recommendations for asthma. We propose that asthma control and lung function are affected by diet and the underlying nutrient metabolism. Our hypothesis is that shifting nutrient utilization towards lipid and ketone fuels will improve asthma control and lung function.

In this NORC P&F study, we will utilize a randomized multiple-crossover design clinical trial to examine the effect of 3 distinct dietary approaches on asthma control and lung function in adults with both obesity and asthma. Participants will undergo habitual diet monitoring followed by the 3 diet arms, each for 7 days, in randomized order with at least a 7-day washout between arms. Diets will be isocaloric and fully provided to the participants. At baseline and after each diet arm, participants will undergo clinical and metabolic characterization, including asthma control and lung function. The findings from this pilot trial will inform future trials aimed at the development of nutrition approaches for asthma.

## Obesity-related mitonuclear imbalance in aged skeletal muscle is restored by exercise training

**Wagner Dantas, PhD**
Senior Postdoctoral Fellow

Integrated Physiology & Molecular Medicine Lab

Pennington Biomedical Research Center

Muscle atrophy or the loss of skeletal muscle mass is the most common complication in aging populations. Decline in skeletal muscle function with age is associated with metabolic dysfunction, chronic disease susceptibility, loss of mobility, and an overall increase in mortality rate. Currently there is limited information regarding the underlying mechanism(s) that explain the relationship between muscle atrophy and age. A large body of evidence also suggests that persistent dietary fat overload causes mitochondrial dysfunction and systemic metabolic gridlock. Mitochondria are the primary energy production site and thus important for muscle function. It is well established that muscle wasting occurs due to alterations in protein synthesis and mitochondrial function. Specifically, mounting evidence has revealed that mitochondria dysfunction is a causal event in initiating loss of strength and muscle atrophy.

Exercise training has been shown to be the most effective intervention to improve mitochondria in aging populations. Moreover, obesity is observed in ~35% of adults over 65 and exacerbates loss of muscle quality by accelerating fat accumulation and lowering physical activity. As such, the purposes of this study are 1) to examine how obesity-induced loss of mitochondrial quality control in muscle during aging and 2) determine if exercise training protects against obesity-induced impairments in mitochondrial quality in muscle during aging. We expect that obesity triggers a loss of balance between mitochondrial and nuclear-encoded proteins, which will affect the muscle quality during aging. We further hypothesize that mitochondrial quality control enhanced through exercise training will restore both the balance between mitochondrial and nuclear-encoded proteins and mitochondrial function, ultimately restoring the muscle quality. To test this hypothesis, young (3 months) and old (20 months) male C57BL/6 mice will be evaluated under dietary stressors for 16 weeks to assess the role of exercise training in preventing loss of muscle during aging associated with obesity (i.e., sarcopenic obesity).

Currently there are no treatment options to prevent or reverse muscle loss in aging primarily because the mechanisms responsible for this are not known. The proposed studies will identify the mechanism(s) that can be translated to patients with sarcopenic obesity and identify how exercise training may help this population.

## Save the Date for NORC Day 2023

The Pennington / Louisiana NORC is planning a NORC day in New Orleans to be held at the University Medical Center in New Orleans **January 30, 2023**. This half-day event will feature presentations from Pilot & Feasibility Awards winners from over the past 10 years and will offer a conduit for scientific exchange between members of the NORC community. For more information contact Jacqueline Fox at Jacqueline.Fox@pbrc.edu.

# Announcing the LAUNCHED Program

**Robert Newton Jr., PhD**
Program Director & Associate Professor

Physical Activity & Ethnic Minority Health

Pennington Biomedical Research Center

**Peter Katzmarzyk, PhD**
Program Director & Professor

Assoc. Executive Director of Population Sciences

Pennington Biomedical Research Center

Members of ethnic minority groups are currently underrepresented in academia. This has a direct effect on health disparities research because underrepresented ethnic minority (UrEM) scientists tend to engage in health disparities research, such as obesity and diabetes. In order for UrEM scientists to make a sustained impact on these issues, they must be able to obtain federal grant funding. The **L**ouisiana Center for **A**dvancing **U**nderrepresented Scie**n**tists **C**areers in **H**ealth, Nutrition, Ob**e**sity, and **D**isparities Research (LAUNCHED) will develop a comprehensive program to increase the success rate of UrEM to successfully compete for federal research funding relevant to NIDDK.

The LAUNCHED program will provide cohort members with academic mentorship, grant writing opportunities, peer mentoring, and didactic instruction in nutrition, obesity, and diabetes, with a particular emphasis on health disparity research methods. Cohort members will also be provided with life coaching, from certified coaches, to help overcome any outside barriers impeding goal attainment. Mentors will be educated on barriers facing UrEM scientists and will be provided with specific skills for working effectively with UrEM scientists. The LAUNCHED program will also provide a pilot and feasibility program, specific to diabetes, obesity, and nutrition research, to provide preliminary data that can be used to build the research portfolio of UrEM scientists.

The LAUNCHED proposal will be led by investigators at Pennington Biomedical and is a collaboration among several institutions with existing working relationships: Tulane University, Louisiana State University A&M, LSU Health Sciences Center New Orleans, Xavier University of Louisiana, and Southern University; the latter two being a Historically Black College and University. The program is partially built on the backbone of Pennington's Center grants, including a T32 in Obesity Research, a Nutrition Obesity Research Center (NORC), a Center for Biomedical Research Excellence (COBRE), and the Louisiana Clinical and Translational Science (LA CaTS) Center. Therefore, the LAUNCHED program involves several major universities within Louisiana to form a powerful union to promote the careers of UrEM scientists.

## Pilot and Feasibility Competition:

In its first year, LAUNCHED will dedicate up to $160,000 to fund 2 to 4 pilot and feasibility (P&F) grants. RFA: **https://launchedfunding.pbrc.edu/.** Each grant is limited to a maximum budget of $50,000 There are two major objectives to this program.

1. To provide research support to early career URM scientists who seek to conduct research relevant to the NIDDK.
2. To provide early career URM scientists with the resources to generate preliminary data for subsequent grant applications to the NIH and other entities, and to integrate novel research approaches into their repertoire.

**Important dates:**

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| Letter of Intent (LOI) due | Oct 31, 2022 |
| Invitation to submit full app | Nov 15, 2022 |
| Full application due | Dec 20, 2022 |
| Notification of funding | Jan 15, 2023 |
| Award begins | Feb 1, 2023 |

# NORC Member Spotlight

**Cristal Hill, PhD**
Senior Postdoctoral Fellow

Neurosignaling Lab

Pennington Biomedical Research Center

The Pennington / Louisiana NORC wishes Cristal Hill a Congratulations and Bon Voyage! Cristal has been a shining star of the Pennington Biomedical Postdoc Program receiving an NIDDK F32, 2 NORC P&F Awards, an NIGMS MOSIC K99/R00 award and the inaugural award for Outstanding Postdoctoral Fellow Award at Pennington Biomedical in 2021. This award was in recognition for her excellence in research, academic involvement, and service. Cristal will begin her Assistant Professor position at the University of Southern California in 2023 and we look forward to seeing her continued success!

'Based on her drive, success in grant funding, interactions with colleagues both at PBRC and across the globe, I have no doubt that she will be successful.'

– Jackie Stephens, Ph.D., K99 Mentor

'I am extremely proud of Dr. Hill and honored to have had the opportunity to work with her. She is a great person and a great scientist. I am excited for her future.'

– Chris Morrison, Ph.D., Postdoctoral Mentor

## LA CaTS 2023 Underrepresented Minority Roadmap Scholar Award

The Louisiana Clinical and Translational Science Center is committed to advancing the diversity of the scientific workforce in Louisiana and the research and career development of all people. Despite tremendous advancements in scientific research, information, education, and research opportunities are not equally available to all. To ensure LA CaTS is providing equal access to training opportunities, we are excited to announce the launch of the LA CaTS Underrepresented Minority Roadmap Scholar (UMRS) award. The full text of the application instructions can be found here.

**Important Dates:**

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| Informational Webinar (Zoom meeting link) | TBD |
| Applications Deadline | November 30, 2022 |
| Nominees and Mentors Notified | February 28, 2023 (approximately) |
| Salary support | July 1, 2023, through June 30, 2025 |
| Classes begin for Scholars | July 3, 2023 |

For questions, contact the LA CaTS Professional Development Core CareerDevel@LACaTS.org.

**The Pennington / Louisiana NORC Newsletter is brought to you by the NORC Enrichment Core.**

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