Southern University Agricultural Research & Extension Center

Center of Excellence for Nutrition, Health, Wellness and Quality of Life

Introduction

- African Americans (AAs) remain the least healthy ethnic group in the USA.
- Diet is a key contributor to disparities in many chronic diseases and conditions.
- AA communities have trusted 1890 institutions for more than a century.
- Therefore, 1890 institutions can play important roles in assisting AAs to combat diet-related disparities especially obesity and its related chronic diseases.

Introduction cont.

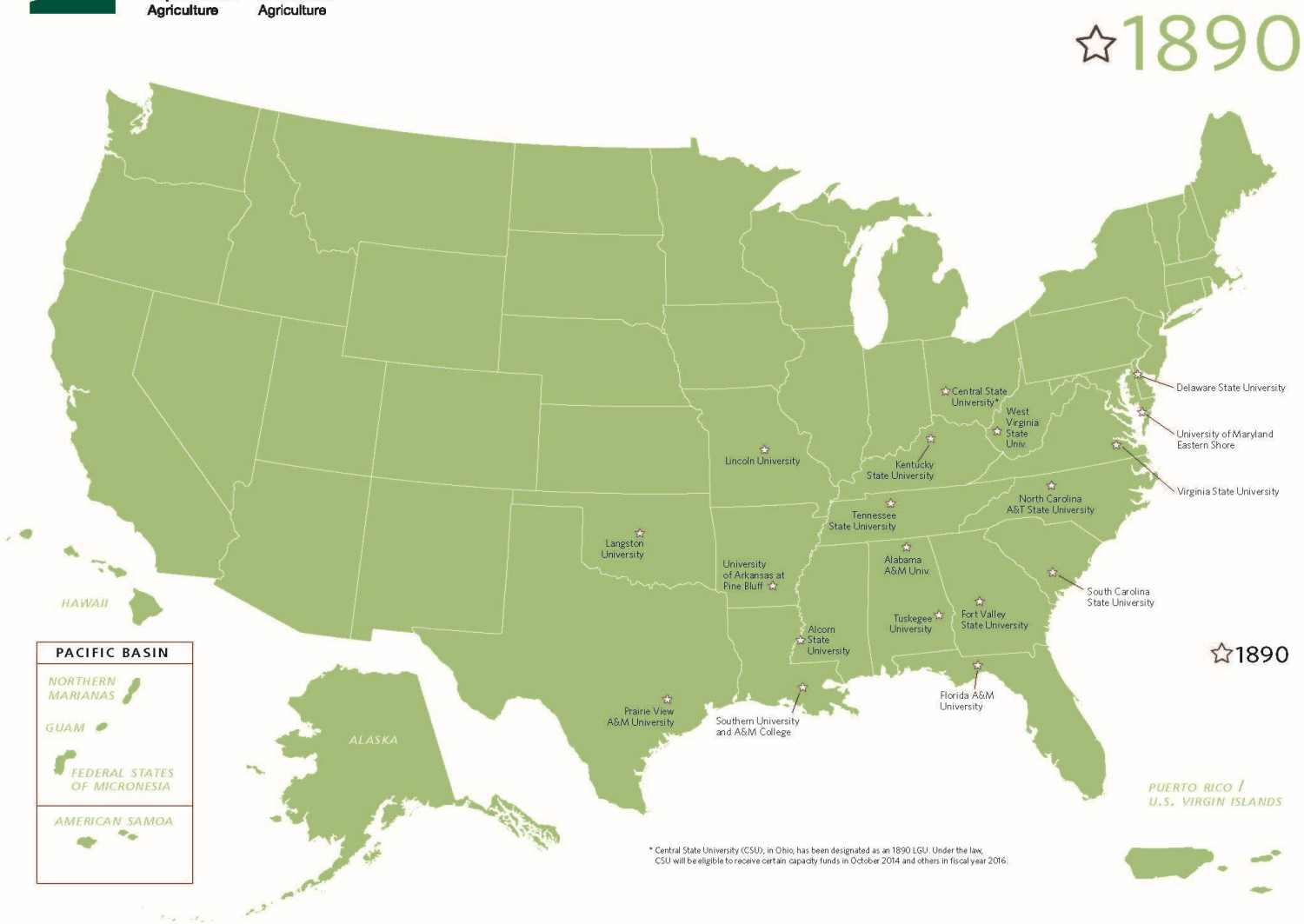
- Louisiana, North Carolina, and Alabama are among the top 10 most obese states in non-Hispanic black adults.
- Southern University and A&M College, North Carolina A&T State University, and Tuskegee University are in a unique position to partner and collaborate through the establishment of a COE that will improve the health and well-being of underserved and minority populations.

Mission

The 1890 Center of Excellence for Nutrition, Health, Wellness and Quality of Life (NHWQL) seeks to support the triple land-grant's mission of research, teaching and extension to contribute solutions to improve the health and well-being of underserved and minority populations.

USDA United States Department of Agriculture | National Institute of Food and Agriculture

NIFA LAND-GRANT COLLEGES AND UNIVERSITIES



* Central State University (CSU), in Ohio, has been designated as an 1890 LGU. Under the law, CSU will be eligible to receive certain capacity funds in October 2014 and others in fiscal year 2016.

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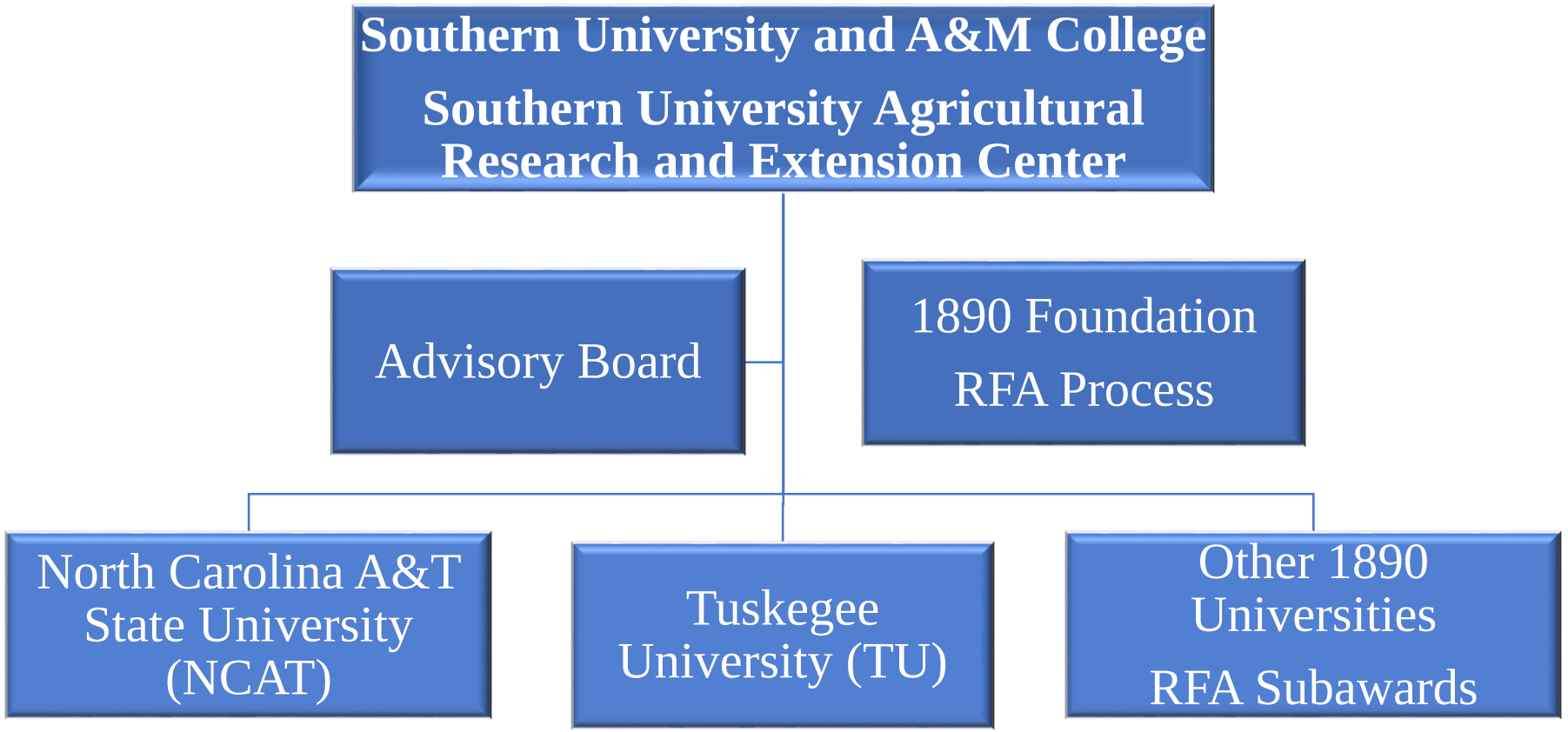
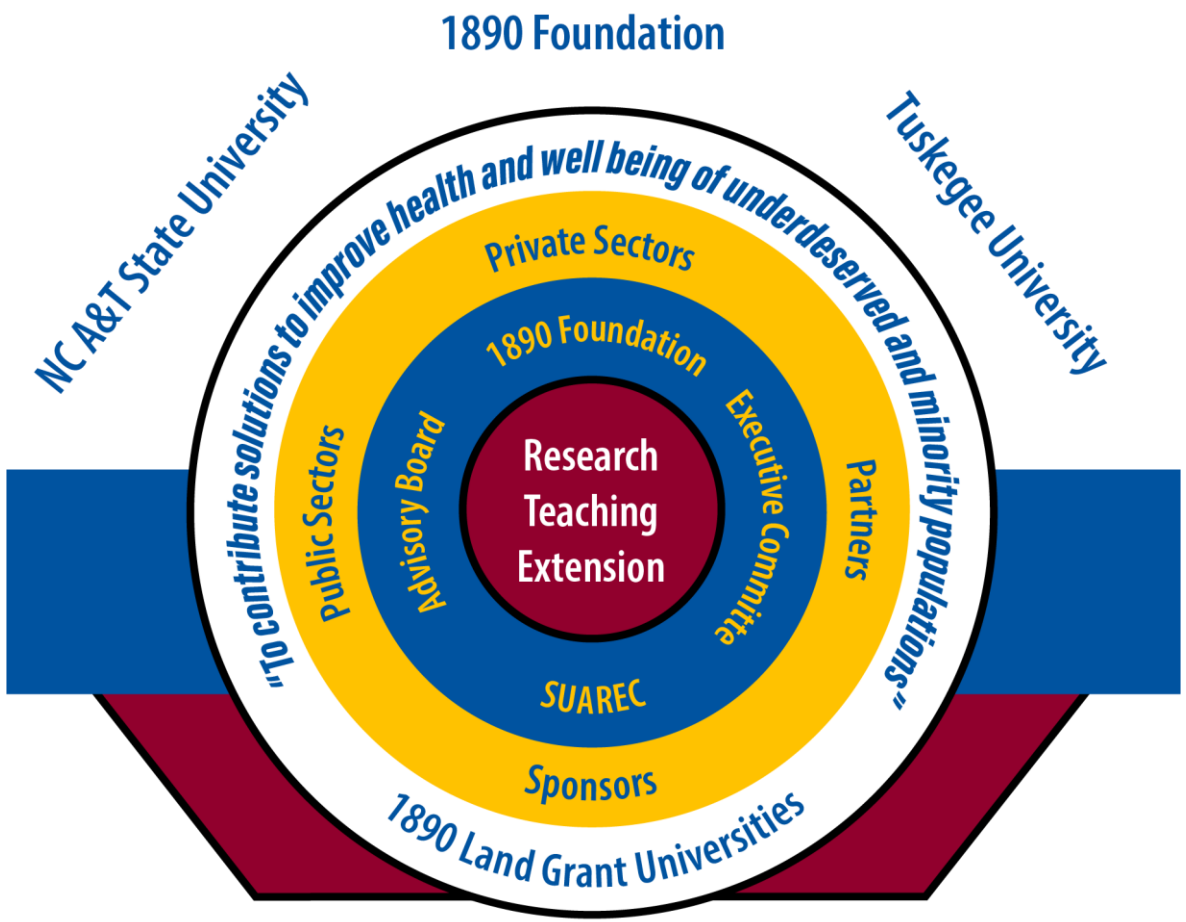
College of Agricultural, Family and Consumer Sciences

COE Team


Southern University and A&M College
Southern University Agricultural Research and Extension Center
Advisory Board
1890 Foundation
RFA Process
North Carolina A&T State University (NCAT)
Tuskegee University (TU)
Other 1890 Universities
RFA Subawards

COE Team



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Goals

1) **Research**: To enhance the research capacity at 1890 institutions focusing on food intake and nutritional/health outcomes.

2) **Teaching:** To strengthen and advance innovative food and nutrition educational and instructional strategies for students at 1890 institutions.

3) **Extension:** To provide training and education to underrepresented communities through multi-state food and innovative nutrition outreach programs.

Research

- Objective: To conduct innovative research in the areas of food, nutrition, health and wellbeing
- Expected Products and Results:
  - 1) Establish targeted metabolomic methods to analyze the important microbial metabolites.
  - 2) Develop the platform for untargeted metabolomic analysis of fecal metabolites.
  - 3) Identify the microbial metabolites that can discriminate lean individuals from obese individuals.
  - 4) Determine the association between food intake and gut microbiota profiles in the three geographic regions.
  - 5) Build a metabolomics core facility at NCA&T to study diet-related health disparities.

Flyer

- As a part of research project SUAREC, NCA&T and TU will be recruiting participants.
- 32 AA participants from each university's surrounding areas
- 16 females 8 with BMI 20-25 and 8 with BMI 30-40 and 16 males the same as females ages 18-60
- Participants will collect 5 days of food diaries and a stool sample at the last day (Day 5)
- They bring the stool samples and diaries to SUAREC
- The samples will be shipped to NC A&T for analysis

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Fact Sheet

Gut Microbiota

Introduction

African Americans remain the least healthy ethnic group in the United States. Diet is a key contributor to the disparities that we see in many chronic diseases and conditions that affect this population. In order to address and ultimately eliminate these health disparities, it is important to understand how various factors, including diet and nutrition, contribute to these disparities.

What is microbiota?

Very small organisms that coexist peacefully in healthy individuals. These microorganisms are all throughout the body, but are mainly located in the large and small intestine.

How are we exposed to microbiota?

1. Infancy is the first time we are exposed to these microorganisms. As we exit the birth canal the exposure is directly based on the species found in the mother and from breast feeding. Eventually, we collect more microbiota by the food we eat and places we go.

Why Our Area?

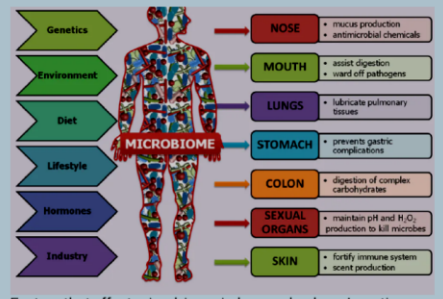
2. Many factors, such as diet and lifestyle, affect the composition of an individual's gut microbiota. It is easier to group various types of microbiota by comparing limited data types collected from a specific set of individuals. There is a theory that structure of the microbiota community is initially started by the way species enter. It is easy to understand that an individual that lives in a urban area of New York will have different microbial community than one who resides in a rural area of Louisiana.

Why Stool Collection?

3. Most of the collection tactics for healthy individuals tend to be invasive. Stool collection is the most convenient method. The most accessible microbiota content can be found in the lower digestive tract (large intestine) closest to the feces.

Diet plays an important role in our everyday life. Diet alters the composition of microbiome. Digestion microbiota aids in absorption of nutrients, shaping of the immune response, synthesizing of bioactive compounds such as Short Chain Fatty Acids (SCFA), Vitamin B/K and developing neuronal system. Microbiota also helps produce their own metabolites and digest things that our cells cannot do themselves. While some are beneficial others are considered pathogenic. Microbiota can be linked to diseases such as Alzheimer's disease, depression, cancer, and autoimmune disease. Microbiota also can interact with the medication that we take.

The funding for "COE for nutrition, health, and wellness and quality of life" has been provided by USDA/NIFA #2021-38427-34836



Factors that affect microbiome in human body Location

Although it is invisible the microbiota is considered very impactful. A major aid in our body's ability to function and make frequent changes throughout our life span.

Word Bank

Skin - Protects against unwanted bacteria and pathogens, healing wounds, communication with the body, and a defense for the immune system.
Gut - Helps in digestion of complex carbs and breaks down nutrients.
Intestine - Helps in ingestion of medications, nutrients in foods such as production of vitamin B12 found in meat, and hormone regulation

Carbohydrates - (Carbs) Found in a wide range of food items that includes a variety of nutrients important to the diet. Examples include: fruits, vegetables, bread, pasta, and grains.
Organs - A group of tissues in a living organism that have adapted to perform a specific function. Example : small intestine or large intestine, etc..
Metabolism - Life sustaining chemical reaction that changes food into energy
Short Chain Fatty Acids (SCFA) - Plays a vital role in the maintenance of health and development of disease. SCFA are apart of a larger group of fatty acids that are made by the gut microbiota during the breakdown of partially and nondigestible carbohydrates.
Microbiota - Living organisms of a specific habitat located in the digestive system
Microbiome - An everchanging community of all the microorganisms found in and on our body that can be beneficial or harmful.
Pathogen - Bacteria that can cause diseases or illness

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Teaching

- Objective: To expose students to the best educational and leadership opportunities within the field of nutrition, health, wellness and quality of life.
- Expected Products and Results:
  - 1) Recruit and train nine 1890 Center for Research and Extension Scholars (three scholars/university).
    - Undergraduates will collaborate and participate in innovative research and Extension projects that have a direct impact on diet-related disparities.
  - 2) Provide a virtual symposium series on diet-related health disparities to the 1890 community.
    - Open to students and faculty at all 1890s.
    - Highlight faculty, extension specialist, students and community experts conducting work in diet-related disparities.

Extension

- Objective: Create the platform and opportunity for Southern, NCA&T and Tuskegee to work collaboratively to further strengthen the existing nutrition education programs at each institution
- Expected Products and Results:
  - 1) Test the feasibility of the extension program, “Sister’s Together: Move More, Eat Better” at Southern University.
  - 2) Test the feasibility of “Make Fruits and Vegetables Available to All” at Tuskegee University.
  - 3) Share resources and experiences to develop emerging technologies for extension programs that can help the underserved minority communities combat diet-related health disparities to live a healthy life.
    - Mobile Educational Technology Unit
    - Speedway to Health
    - Learning to Love Eating Nutritionally Always Health Solutions, Inc. [LLENA/Artificial Intelligent (AI)]
      - app for Android and iPhone
      - identifies 24/7 access to healthy food recommendations and food recipes

1890 Universities Foundation

- Pilot project program for faculty at all 1890 institutions
  - 5 projects to be funded
  - For this RFA cycle, $250,000 is available for sub awards
  - RFA released – July 26, 2021
  - RFA Informational Conference Call –TBD
  - Proposals due – September 7, 2021 (5:00 pm EST)
  - Proposals reviewed – September 8-22, 2021
  - Recipients Notified – September 27, 2021

Advisory Board

- Consist of 9 members
- Representatives are from:
  - Medical societies
  - Faculty /Scientist from medical and biomedical institutions
  - Community members
  - Private companies /food industry
  - Government agencies
  - Faith based organizations

Team Members

- Dr. Malekian, Professor and Director of Southern University Institute for Food, Nutrition and Wellness, Project Director (SUAREC)
- Dr. Marshall, Vice Chancellor for Academics (SUAREC)
- Dr. York, Vice Chancellor for Extension (SUAREC)
- Dr. Oscar Udoh, Director of Grants and Facilities (SUAREC)
- Brittany Howard, Project Coordinator (SUAREC)
- Dr. Hymon-Parker, Associate Dean for Research (NC A&T)
- Dr. Sang, Professor (NC A&T)
- Dr. Alexander, Assistant Professor, (NC A&T)
- Dr. Dawkins, Professor, Department Chair, (TU)
- Dr. McLaren, Vice President for Program Innovation and Implementation, 1890 Universities Foundation
- Dr. Neufville, President & CEO of 1890 Universities Foundation

This project has been funded by USDA/NIFA Award No. 2021-38427-34836

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