EXPLORING EPIGENETICS AND AGING RESEARCH

Dr. Manoswini Dash is a postdoctoral researcher at the COBRE Genomics Core of the Tulane Center for Aging, where she is actively engaged in pioneering aging research. Her current work focuses on the influence of epigenetic modifications on the generation of cryptic transcripts during aging. To explore these questions behind aging in genetics, Dr. Dash and her team employ the retinal pigment epithelium as a model system. This research promises to provide valuable insights into the pathophysiology of cryptic transcripts and their potential connection to Age-related Macular Degeneration (AMD).

Dr. Dash’s previous research experience includes a study on the methylome status of circulating cell-free DNA in individuals with Acute Myocardial Infarction (AMI). Leveraging advanced bioinformatics approaches, this research has significant implications for the early diagnosis and treatment of heart conditions, making it a crucial contribution to the field.

When asked about who had influenced her research, Dr. Dash expressed admiration for individuals who exhibit passion in their pursuits, regardless of their field. She also credited her PhD supervisor, Dr. Abhinav Sinha, for instilling in her the significance of critical thinking and questioning, qualities that she considers indispensable for anyone involved in fundamental research. Additionally, working under the guidance of Dr. Jazwinski at the Tulane Center for Aging, Dr. Dash highlighted the unique balance between scientific autonomy and support that has contributed to her growth as a researcher and her personal development as well.

Dr. Dash's research approach combines molecular techniques with bioinformatics, allowing her to navigate the complex relationship between data generation and analysis. Her method involves starting with biological samples, delving into the intricacies with shell scripting, and unraveling the complete story. This approach is central to her ongoing research at the Center for Aging, where she seeks to answer fundamental questions in the field of aging.

One of Dr. Dash's significant research accomplishments during her PhD was her contribution to a study that advanced our understanding of malaria epidemiology in India. The research, which examined over 2500 symptomatic individuals across nine states, provided vital insights into the prevalence and distribution of malaria-causing parasites, Plasmodium falciparum and P. vivax. This knowledge is crucial for developing effective strategies to control and eliminate malaria in India, aligning with the country's goal of malaria elimination by 2030.

Dr. Dash also shed light on some of the challenges in her research area. She emphasized the importance of recognizing and sharing negative results and troubleshooting, as they are invaluable for the scientific community and future research. This transparent approach ensures a comprehensive understanding of research processes and outcomes. When discussing multi-omics data analysis, Dr. Dash pointed out that although advanced tools using AI/ML are emerging for data analysis, there is a gap in translating the data into meaningful biological interpretations. Ensuring reproducibility of findings in the lab remains a significant challenge and an opportunity in the field of multi-omics data analysis.
TARGETING CANCER THERAPY FOR IMPROVED OUTCOMES IN OLDER PATIENTS

Kurtis Willingham is an Interdisciplinary PhD in Aging Studies candidate at Tulane University Center for Aging. As a part of his dissertation research, Willingham is involved in unraveling the complexities of cancer treatment in older patients. Working under the guidance of Dr. Reza Izadpanah in his lab they are investigating the effects of the TRAF3IP2 gene in relation to cancer growth and progression.

The innovative aspect of this research lies in the precise targeting of TRAF3IP2, which affects multiple pathways within cancer cells, specifically those promoting growth within the tumor microenvironment. Notably, this approach seeks to minimize toxicity to patients, especially older adults, who are more vulnerable to the adverse effects of conventional cancer treatments. As Willingham explained, "Aging is the largest risk factor for cancer incidence, and older age can lead to concerns about treatment side effects that reduce the quality of life in older adult patients." By targeting treatment specifically, it is possible to not only treat the cancer but also mitigate the accompanying toxicity and side effects, ultimately enhancing the quality of life for older adult patients.

When discussing the influences that shaped Willingham's research path, the candidate emphasized the profound impact of their grandparents. Witnessing how his grandparents maintained their active lifestyles well into their 70s and 80s, despite dealing with illnesses, inspired the candidate to contribute to the preservation of functional independence in older individuals. As Willingham recalls, "It made me want to be able to help others maintain their function and independence as long as they can, so they can continue doing what they love for as long as possible."

In terms of research development, the candidate's role has primarily focused on identifying signatures associated with gene knockdown and studying the direct and indirect effects of treatment. Willingham's work emphasizes the crucial need to understand the impact of targeted treatment on both malignant and non-malignant cells, recognizing the complexity of the overall treatment process.

When asked about the significant challenges in his research area, the candidate highlighted the critical issue of balancing treatment benefits with health outcomes, particularly in older adults. Finding the right balance is essential, as aggressive treatments may compromise the quality of life, while undertreatment can prove to be ineffective, especially in cases of aggressive cancers such as Glioblastoma multiforme and Triple-Negative Breast Cancer (TNBC), which tend to exhibit higher mortality rates in older age groups. Looking forward, Willingham revealed his upcoming research focus on investigating the effects of bioenergetics and proteostasis in cancers, and the methods that sustain transient signaling constitutively active and maintained.
AIG MEETINGS

October 30, 2023
Elyce Picciotti, student
https://tulanehipaa.zoom.us/j/97996364957
4:30-5:30PM

November 2, 2023
Marlene Friis, student
https://tulanehipaa.zoom.us/j/92451049298
4:00-5:00PM

November 6, 2023
Theodora Odonkor, student
https://tulanehipaa.zoom.us/j/99890040235
4:30-5:30PM

November 13, 2023
Kurtis Willingham, student
https://tulanehipaa.zoom.us/j/94725059275
4:30-5:30PM

Contact us!

Please feel free to reach out about publications, grants, events, or other information you would like to share.

Editorial Contact:
Kamile Mitkus | Program Coordinator School of Medicine - Center for Aging Office:
504.988.3369 kmitkus@tulane.edu