Dr. Rout’s involvement with the Center for Aging began with the COBRE P20 grant led by Dr. Jazwinski, which gave her the opportunity to connect with a diverse group of young investigators at Tulane University and established senior investigators across the country working in the field of Aging research. This was instrumental in developing her research interests in the immunology of biological aging. Her current research involves studies in aging nonhuman primates (NHP) to understand immunological mechanisms of healthy aging versus age-related inflammation that contributes to inflammatory comorbidities in the elderly. Dr. Rout’s lab is interested in immune cells that regulate inflammatory pathways in tissues and can thereby influence susceptibility to infectious and non-infectious diseases with aging. Many of her projects focus on “unconventional” T cells, such as γδ T cells, Natural Killer T (NKT) cells and Mucosal-Associated Invariant T (MAIT) cells and their tissue-specific functions. Her research is innovative in its focus on developing immunotherapeutic approaches targeting in vivo functions of unconventional T cells to impede chronic inflammation and restore tissue homeostasis.

Dr. Rout’s most significant research accomplishment has been to span NHP and clinical research efforts toward investigating the persistent inflammation and accelerated aging of chronic HIV infection by simultaneously testing novel hypotheses in pre-clinical and clinical settings. She believes bench to bedside doesn’t have to be a stepwise process and bidirectional translational research can be leveraged to accelerate development of novel therapies. Her research has contributed to the emerging concept of gastrointestinal immunity playing a critical role in diverse disease pathogenesis. Dr. Rout and her team are further exploring the mechanisms by which the gut immune system influences airway, cardiovascular and central nervous system via inflammatory pathways. She adds that the intricate relationships of immune pathways with multiple homeostatic and pathogenic mechanisms are the biggest issues in HIV and Aging research.

She considers the article “Dysregulation of IL-17/IL-22 Effector Functions in Blood and Gut Mucosal Gamma Delta T Cells Correlates with Increase in Circulating Leaky Gut and Inflammatory Markers During cART-Treated Chronic SIV Infection in Macaques; doi: 10.3389/fimmu.2021.647398.” as one of her most important papers because it represents a substantive departure from the current dogma that HIV infection and inflammation drives gut barrier disruption, and laid the foundation for the current work in her lab to test in vivo modulation of gamma delta T cells for repair of gut barrier functions in the experimental model of chronic HIV infection. Dr. Rout hopes it will change the perspective of approaching HIV-aging comorbidities as virus-independent mechanisms that are common to noninfectious inflammatory disease processes as well, and thus advance the field toward understanding and managing inflammatory comorbidities that are a burden on the care for aging population regardless of HIV infection. In the next year, papers from Dr. Rout’s lab are focused on specific signaling pathways that can modulate inflammation at barrier tissues and their implications on infectious and age-related disease pathogenesis.
HYPERMOBILE EHLER'S-DANLOS SYNDROME RESEARCH

Taylor Johnson is a sixth year PhD Candidate in the Interdisciplinary Aging Studies Program at the Tulane Center for Aging. Johnson is currently studying Hypermobile Ehler's-Danlos syndrome and its associated comorbidities, including dysautonomia. Specifically of interest is the progressive deterioration of physical functioning and quality of life in hEDS with age. Dysautonomia symptoms have been reported in nearly 80% of adults in hypermobility spectrum disorder (HSD) and hEDS cohorts. Symptomatic autonomic dysfunction is recognized as being the source of complex multisystemic ill-health and reduced quality of life in both hEDS and HSD patients. There are a few nonpharmacologic treatments for the vasomotor symptoms associated with dysautonomia that improve sleep, fatigue, and quality of life.

Johnson and her lab are studying a novel thermoregulation device for hEDS patients suffering from dysautonomia and temperature dysregulation. hEDS is thought to be rare in the medical community, and that’s one reason that patients struggle so long to be diagnosed—on average 12 years. Yet a recent study found that 1 in 500 people have hEDS or HSD, and even that is considered modest. Despite the high prevalence, there is no cure and very few treatments, leaving patients to live in pain and constantly seeking medical care. Tulane University has one of the very few Hypermobility and EDS clinics, where Johnson has been researching for her PhD. Johnson, personally, has hEDS and knows what it's like to go through the diagnostic journey. Through her own lived experience, she hopes to be an advocate for patients in the academic realm, as she acts directly researching the patient’s needs.

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

https://medicine.tulane.edu/tulane-center-aging
UPCOMING SEMINARS

April 27, 2023
Dr. Robert Tower
"Cerebromicrovascular mechanisms of age-related
cognitive decline"
4:00PM (SOM room 7001)
https://tulanehipaa.zoom.us/j/91762785301

AIG MEETINGS

April 21, 2023
Dr. Reza Izadpanah, DVM, PhD
“Aging and Tumor Microenvironment in Cancer
Progression”
https://tulanehipaa.zoom.us/j/95981201033
4:30-5:30PM

May 8, 2023
Dr. Ahmed Moustafa, PhD
"Visium Spatial, Map the Unseen!"
https://tulanehipaa.zoom.us/j/96502615496
4:30-5:30PM