PROSTATE CANCER & miRNA RESEARCH

Dr. Moustafa is a Postdoctoral Researcher at the Spatial Multiomics core, which is a brand-new core at Tulane Center for Aging. In the Spatial Multiomics core, Dr. Moustafa is responsible for all wet lab techniques for the cutting edge 10X Genomics Visium for Fresh Frozen (FF) and Visium for Formalin-Fixed Paraffin embedded (FFPE) specimens. His previous research experience was focused on the molecular oncology of Prostate cancer (PC) and how patient derived adipose stem cells communicate with the neighboring cancer cells via exosomes to support cancer growth and metastasis. When Dr. Moustafa joined the Sammarco lab, Dr. Sammarco introduced him to a new branch of science which is the regenerative medicine. Their research focuses on understanding the process of regeneration and how this process is affected by the process of aging. With Dr. Moustafa's previous and current experiences, he is trying to find a means of using exosome therapy for improving the process of regeneration, especially in the aged population.

When questioning Dr. Moustafa about the innovation of his work, "[he] believe[s] that the idea of using Exosomes in regeneration, will give a better understanding of how cells communicate with one another during the process of regeneration." During Dr. Moustafa's scientific journey, he says many people have shaped his scientific mind. Dr. Zackeira Abdel-Mageed, his "Scientific godfather," taught him all the basic knowledge in addition to the technical aspects of science. Additionally, Dr. Kim Hogyoung inspired Dr. Moustafa and guided him during his PhD training and during his postdoctoral training. Also, Dr. Jazwinski and Dr. Sammarco introduced him to the cutting-edge technology of Visium, and they enriched his knowledge about this technology through their guidance, critical thinking, and problem solving.

One of Dr. Moustafa's most significant accomplishments, in coordination with the team, was the discovery of a miRNA dysregulation signature that could distinguish indolent PC tissue from normal prostate tissue, thereby highlighting novel diagnostic biomarkers for early diagnosis of indolent PC. One of the key aspects of their approach was "to isolate RNA from only those PC patients with indolent tumors, taking two "matched" samples from each patient: one from the tumor tissue and one from the adjacent normal tissue." They then used a microarray tool to determine levels of miRNA expression in the different samples, producing miRNA expression "profiles" for PC versus normal tissue; this revealed a pattern of significant dysregulation in PC cells, comprising an initial miRNA dysregulation signature for indolent PC.
This was the first study identifying miRNA signatures in micro-dissected indolent (Gleason score 6) prostate cancer in comparison to matched normal prostate epithelium. Dr. Moustafa explained "by employing in silico and computational prediction analysis, the study provides a landscape of potential miRNA targets and key cellular pathways involved in prostate tumorigenesis. Identification if miRNAs and their relevant targets and pathways paves the way for understanding the mechanistic role of miRNAs in human prostate tumorigenesis, and possibly other human cancers." Importantly, the study's outcome has important clinical implications for prostate cancer management, including the use of miRNA(s) as biomarkers for early detection of it. These findings were published in "Identification of microRNA signature and potential pathway targets in prostate cancer" in the Experimental Biology and Medicine journal. This paper was the most downloaded paper in 2017, and Dr. Moustafa and the team were invited by the journal to write a mini review as well.

DR. JOCELYN SIMONS
PhD Awardee
Interdisciplinary PhD in Aging Studies

Dr. Jocelyn Simons is a recent graduate of the Interdisciplinary PhD in Aging Studies and defended her dissertation in March of 2023. Dr. Simons is a cognitive-behavioral neuroscientist and geroscienctist with specialization in biopsychosocial health factors across the life course. Her dissertation focused on cognitive, behavioral, and physical health across the lifespan in elite athletes. Additionally, as a Speech-Language Pathologist, she brings a unique perspective and passion for clinical and translational research. Dr. Simons just started her postdoctoral fellowship with Dr. Patrick Bordnick, Dean of the Tulane School of Social Work, focusing on cognitive-behavioral health for substance use and addiction research.

Throughout her PhD journey, Dr. Simons had the pleasure of connecting and collaborating with wonderful scientists, faculty, and clinicians in the Tulane and New Orleans community. The biggest influence on Dr. Simons is the impact of Dr. Patrick Bordnick and the rest of her dissertation committee (Dr. Audrey Hai, Dr. Gregory Stewart, Dr. James Cronin). Dr. Bordnick has been an integral, guiding force in her journey, and she expresses great gratitude. Dr. Simons' committee has guided, supported, and challenged her to prepare her for the goal of an academic career. Dr. Mic Dancisak from Biomedical Engineering was one of the first faculty members she met during her PhD, as she was a student in his central nervous system dissection course. He has helped her expand her perspective and learning on aging and life course issues in her teaching and research capacity.

Over the summer, Dr. Simons will submit at least three papers from her dissertation. Dr. Simons will be a co-author on a large meta-analysis/systematic review project for substance use nearing completion and one paper currently in review. Currently, she has two studies in the IRB submission process and is looking forward to beginning data collection on those projects.

Congratulations to Dr. Jocelyn Simons from the Tulane Center for Aging for successfully completing the Interdisciplinary PhD program in Aging Studies and wishing you good luck in your future endeavors!
AIG MEETINGS

June 12, 2023
Kurtis Willingham, student
https://tulanehipaa.zoom.us/j/95987812501
4:30-5:30PM

June 26, 2023
Nwanyieze Jiakponnah, student
https://tulanehipaa.zoom.us/j/93952009105
4:30-5:30PM

July 24, 2023
Dr. Elizabth Engler-Chiurazzi, PhD
https://tulanehipaa.zoom.us/j/95651882258
4:30-5:30PM

July 24, 2023
Marlene Friis, student
https://tulanehipaa.zoom.us/j/94612474325
4:30-5:30PM

Contact us!

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

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