

In Balance

THE UNIVERSITY OF TEXAS
MD Anderson
Cancer Center
Making Cancer History®

March 2019

The Center for Energy Balance in Cancer Prevention and Survivorship, of the Duncan Family Institute, facilitates and conducts state-of-the-science research to understand the relationship between activity, nutrition, obesity and cancer, and uses this knowledge to optimize interventions to decrease cancer risk and improve cancer outcomes. The Center sponsors collaborative research, transdisciplinary educational opportunities and seminars to create, produce and disseminate innovative and practice-changing research results.

Center for Energy Balance in Cancer Prevention & Survivorship Energy Balance Special Seminar:



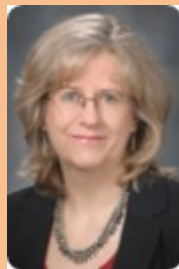
Date: Thursday, March 21, 2019

Title: Tomato carotenoids for cancer prevention: A multi-disciplinary strategy to define mechanisms

Presenter: **Nancy E. Moran, Ph.D.** – Assistant Professor, USDA-ARS Children's Nutrition Research Center at Baylor College of Medicine

Directors:

Karen Basen-Engquist, Ph.D., M.P.H.
kbasenen@mdanderson.org
713-745-3123



Joya Chandra, Ph.D.
jchandra@mdanderson.org
713-563-5405



Getting to Know Nancy E. Moran, Ph.D.

Dr. Nancy Moran is very clear about her mission, her passion and her professional goals. "In my research, with my lab, we seek to understand how dietary carotenoids – the colorful red, orange and yellow compounds found in fruits and vegetables – impact human health. Some carotenoids, such as beta-carotene and alpha-carotene, are converted to vitamin A in the body, and in turn, play an important role in development and health. Other carotenoids, such as red lycopene and yellow lutein, are not pro-vitamin A, but may play a role in cancer prevention and promotion of visual and cognitive function, respectively."

"Our program engages a translational research approach, studying carotenoid metabolism and bioactivity in both model systems and in humans. We are studying the mechanisms by which carotenoids are absorbed and distributed throughout the body, how blood and tissue carotenoid concentrations can be used as biomarkers of dietary intake, and the molecular impacts of carotenoids in the body to better understand how carotenoids may promote health across the life cycle," she adds.

Since 2016, Dr. Moran has served as Assistant Professor, tenure track, of the USDA/ARS Children's Nutrition Research Center, Department of Pediatrics, Baylor College of Medicine. She earned both her BS in Molecular and Cellular Biology (with a Chemistry minor) and her Ph.D. in Nutritional Sciences from the University of Illinois at Urbana-Champaign. She held her Postdoctoral Fellowship in Nutritional Biochemistry at The Ohio State University, in the OSU Comprehensive Cancer Center, alongside her mentor, Dr. Steven Clinton, MD, Ph.D.

One of her recent studies includes a novel tomato-soy juice given to prostate cancer patients three weeks prior to surgery. "Consumption of and blood levels of lycopene and the phytoestrogens in soy have been epidemiologically-associated with a reduced risk of several cancers, notably prostate cancer," she explains. "However, epidemiologic associations cannot prove cause and effect and provide no insight into the mechanisms by which lycopene impacts physiology. The specific goals of this project are to determine how common genetic variants of a carotenoid metabolizing enzyme change the ability of the liver and prostate cells to accumulate or metabolize lycopene and to determine if lycopene impacts the metabolism of cholesterol in liver and prostate cells as a potential mechanism of cancer prevention. So far, our large interdisciplinary effort has demonstrated that genetic variation is a determinant of the impact of lycopene in blood and prostate tissue. As time goes on, we hope this controlled interventional study provides further insight into how nutrition and genetics interact to modify chronic disease risk."

On the other end of the life spectrum, Dr. Moran is also working with a noninvasive device as a marker of infant dietary intake. "It is very difficult for researchers, doctors and community organizations to accurately and rapidly determine what infants under a year old actually eat and to subsequently intervene to promote a well-rounded diet. In adults, we utilize pressure mediated reflection spectroscopy, which reflects light on the skin, to measure blood carotenoid concentrations. We are now using this same non-invasive skin measure as a biomarker to help assess infants' dietary patterns, and determine the amount of fruits and vegetables children are eating in their first year of life."

In Nancy Moran's world, fruits and vegetables are the baseline for developmental health from infancy to older age. "The adage 'the more colorful foods we eat, the better,' remains constant, and important," she proclaims. "Ultimately, by studying dietary carotenoids, we are hoping to find ways to prevent cancer and improve the health of entire communities, around the globe."