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Dear Colleague,

Welcome to the Winter issue of *Nutrition Frontiers*, a quarterly newsletter from the Nutritional Science Research Group (NSRG), Division of Cancer Prevention, NCI. In this issue, find out how a vitamin D metabolite functions in cancer prevention, a new application of a spectroscopic method to help us assess fruit and vegetable intake, and much more.

RESEARCH UPDATE: ON THE CLINICAL FRONT

New application of a spectroscopic method may help us assess fruit and vegetable intake. Resonance Raman spectroscopy (RRS) has recently been explored for use as a non-invasive method of detecting dermal carotenoids. Developed and now validated by Mayne and colleagues ([Am J Clin Nutr 2010; 92:794](#)), this technique utilizes a laser spectroscopy instrument to rapidly detect carotenoid concentrations in skin. In healthy adults, both intra- and inter-individual variability of total carotenoid and lycopene RRS measures confirmed reproducibility. Further, total carotenoid and lycopene status assessed by RRS correlated with other measures of carotenoid and lycopene status, including HPLC analysis of plasma and dermal biopsies. RRS measures were found to be reproducible and valid and thus, this technique has great potential for use as an objective biomarker of carotenoid and lycopene intake and status in humans. *This study was supported by an NCI award.*



RESEARCH UPDATE: WHAT'S NEW IN BASIC SCIENCE

The previously considered inactive

Upcoming Events

March 15, 2011

[Stars in Nutrition & Cancer Lecture: False Positives, False Negatives, and Small Effects: Genome, Exposome, and Nutrition](#)

Dr. John Ioannidis
Stanford University
NIH Main Campus
Bethesda, MD

March 14-18, 2011

[Nutrition & Cancer Prevention Research Practicum](#)

April 2-6, 2011

American Association for Cancer Research Annual Meeting
Orlando, Florida
www.aacr.org

April 9-13, 2011

Experimental Biology 2011
Washington DC
www.experimentalbiology.org

Announcements

The 2010 Dietary Guidelines are to be released January 31. For information, go to [2010 Dietary Guidelines](#).

Read the recently released IOM Report on the [Dietary Reference Intakes for Calcium & Vitamin D](#)



prohormone and major vitamin D metabolite, 25-Hydroxyvitamin D₃ (25(OH)D₃), may in fact function in cancer prevention by protecting breast epithelial cells against cellular stress. Peng et al. ([J Cell Biochem 2010;110:1324](#)) found that 250 nmol/L of 25(OH)D₃ was as efficacious as 10

nmol/L 1,25(OH)₂D₃ in inhibiting the alteration of p53 expression, a stress responsive molecule, and inhibiting the downregulation of PCNA, a marker for proliferating cells in an *in vitro* stress model, serum starvation. In other stress models including hypoxia, oxidative stress and apoptosis induction, 25(OH)D₃ consistently exhibited protective effects. In the presence of 25(OH)D₃, stress-induced alteration in the expression of multiple miRNAs, including miR182, was either reversed or inhibited. These data suggest that both 25(OH)D₃ and 1,25(OH)₂D₃ can protect against cellular stress, a potential etiologic factor for carcinogenesis. *This study was supported by an NCI award.*

SPOTLIGHT: A CLINICIAN

Johanna W. Lampe, PhD, RD is an Associate Division Director in the Public Health Sciences Division at Fred Hutchinson Cancer Research Center and a Research Professor in the Department of Epidemiology at the University of Washington in Seattle. Dr. Lampe earned a PhD in nutritional



sciences, with a minor in biochemistry, at the University of Minnesota. She went on to train as a post-doctoral fellow in epidemiology at the University of Minnesota before joining the faculty at Fred Hutchinson Cancer Research Center. For over a decade, her research program has addressed the effect of plant-food constituents on cancer susceptibility in humans. Her group uses controlled dietary interventions to evaluate genetic differences in response to plant-based diets. Dr. Lampe was recently awarded a R01 for her project titled: [Cruciferous Vegetable Feeding and Inflammation: Effect of GST Genotypes.](#)

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SPOTLIGHT: A BASIC SCIENTIST

Denise O'Keefe, PhD is an Assistant Professor in the Department of Urology

Quick Links

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at the University of Pittsburg. Dr. O'Keefe's interest in folate first began when she was at Latrobe University, Melbourne, Australia, where she earned her BS and Honors Degrees in Human Genetics. She went on to earn her PhD in Medicine at the University of Adelaide. After moving to the U.S., she studied genomic imprinting at Columbia University. While at Memorial Sloan Kettering Cancer Center and subsequently the Cleveland Clinic, Dr. O'Keefe conducted research on Prostate-Specific Membrane Antigen, a novel folate hydrolase, before being recruited to the University of Pittsburg. Dr. O'Keefe was recently awarded an R01 grant titled: [Folate and PSMA Interact to Regulate DNA Methylation and Prostate Carcinogenesis.](#)

[Read more »](#)

DID YOU KNOW?

Eat the Entire Mushroom, Stem and All?



While white button mushrooms start out as a good source of vitamin D, if they are exposed to UV for as little as 5 minutes after harvesting, they offer up to 869% of the daily value of vitamin D. When exposed to UV light, ergosterol, the mycochemical in the button mushrooms undergoes photolysis to yield vitamin D2.

Young button mushrooms have evenly distributed Ergosterol quantities between the caps and stems, but as a button mushroom matures the caps accumulate more Ergosterol.

Source: Grotto D. *101 Foods That Could Save Your Life*, Bantam Dell, New York, NY, 2008.

Source: *J. Agric. Food Chem* 2010;58(22): 11616-25.

Sincerely,

Your friends at the Nutritional Science Research Group

Division of Cancer Prevention
National Cancer Institute
National Institutes of Health
U.S. Department of Health & Human Services

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