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NUTRITION | FRONTIERS

A newsletter of the Nutritional Science Research Group

Spring 2010

Volume 1, Issue 2

Dear Colleague,

Welcome to the Spring 2010 issue of *Nutrition Frontiers*, a quarterly newsletter from the Nutritional Science Research Group (NSRG), Division of Cancer Prevention, NCI. In this newsletter, we highlight the influence of folate & vitamin B₁₂ on cervical cancer risk in a post-folate fortification era, evidence of n-3 fatty acids influencing epigenetic mechanisms such as microRNA expression, and more. [Stay connected](#) and let us know how you are enjoying this newsletter!

RESEARCH UPDATE: ON THE CLINICAL FRONT

Approximately 25% of the U.S. population has high serum folate concentrations associated with the presence of unmetabolized folic acid. A recent study suggests that high plasma folate levels may



Upcoming Events

June 4-8, 2010

Micronutrient Supplementation vs. Dietary Modification, [American Society of Clinical Oncology](#), Chicago, Illinois

June 16-19, 2010

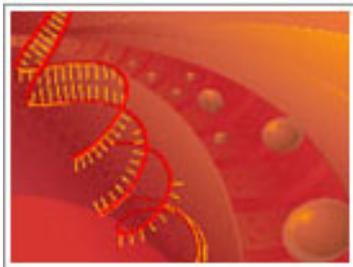
[IV Brazilian Congress of Nutrition and Cancer](#), [II International Conference of Nutritional Oncology](#), Sao Paulo, Brazil

Quick Links

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be protective. Piyathilake et al. ([Cancer Prev Res 2009;2\(7\):658](#)) discovered an inverse relationship between plasma folate, vitamin B₁₂ and [cervical intraepithelial neoplasia](#) grade 2 (CIN 2+). Compared to premenopausal women with lower plasma folate and vitamin B₁₂, women with higher plasma folate and sufficient plasma vitamin B₁₂ had a 70% lower risk of CIN 2+. The protective effects of folate and vitamin B₁₂ may be related to enhanced DNA methylation or reduced DNA damage. *This study was supported by an NCI award.*

RESEARCH UPDATE: WHAT'S NEW IN BASIC SCIENCE



New evidence supports that diet regulates microRNA expression in cancer. Davidson et al. ([Carcinogenesis 2009; 30\(12\):2077](#)) examined the effect of *n*-3 fatty acids on microRNA expression patterns during different stages of

colon cancer development in a rat model. Comparing animals fed a corn oil based diet (15 g corn oil per 100 g diet) to those fed primarily *n*-3 fatty acids from fish oil (11.5 g fish oil plus 3.5 g corn oil per 100g diet), significantly fewer tumors were found in the fish oil group. Further, the fish oil fed animals had a 50% reduction in the number of differentially expressed microRNAs. These findings support the impact of dietary bioactive agents on epigenetic mechanisms, in particular the regulation of microRNAs in the gastrointestinal tract. *This study was supported by an NCI award.*

SPOTLIGHT: PETERS AWARDED PECASE



Ulrike Peters, PhD, MPH Dr. Peters' probing studies on selenium and the interaction of common genetic variations in cancer prevention led to her receiving one of the nation's highest honors for scientists, the *Presidential Early Career Award for Scientists and Engineers (PECASE)*. Peters is a Research Associate Professor of Epidemiology at

- [Division of Cancer Prevention](#)
- [National Cancer Institute](#)

[STARS IN NUTRITION & CANCER](#)



The mammalian gut microbiota interact extensively with the host through metabolic exchange and co-metabolism of substrates. Associated changes in the metabolome-metabolome are increasingly being implicated in the risk of developing several human diseases, including cancer. View the recent lecture by Dr. Jeremy Nicholson, Professor of Biological Chemistry and Head of Department of Surgery and Cancer, Imperial College London, and recent *Stars in Nutrition & Cancer* lecturer, to learn more about the metabolome-microbiome interrelationship.

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the University of Washington School of Public Health and an Associate Member of the Cancer Prevention Program at Fred Hutchinson Center 's Public Health Sciences Division. Prior to joining the Hutchinson Center faculty in 2004, she worked at the Division of Cancer Epidemiology and Genetics, NCI on the Prostate, Lung, Colorectal and Ovarian Cancer Screening Trial. A native of Germany, Peters received her master's and doctoral degrees in nutrition at the University of Kiel, and she received her master's in public health in epidemiology from the University of North Carolina at Chapel Hill. The PECASE was given for a R01 titled, [*Prospective Study on Selenium, Genetics of Selenoenzymes, and Colorectal Cancer.*](#)

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SPOTLIGHT: A BASIC SCIENTIST



Shivendra Singh PhD Dr. Singh is a Professor in the Department of Pharmacology and Chemical Biology, University of Pittsburg where he studies novel dietary agents, such as broccoli and garlic; designs combination chemoprevention regimens; and elucidates the mechanisms of carcinogenesis by environmentally

relevant chemicals. Dr. Singh earned his masters and doctoral degrees in biochemistry from Banaras Hindu University, India. He completed a postdoctoral fellowship at the University of Texas Medical Branch in Galveston. He was awarded a R01 for his project titled, [*Anticarcinogenic Effect of ITCs \(Indole-3-Carbinol\) Against Prostate Cancer.*](#)

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DID YOU KNOW ABOUT YOUR GREENS?



Folic Acid was first purified from spinach and folate gets its name from the Latin word "folium" for leaf. The New Zealand Spinach is a relative of the succulent ice plant.

Source: McGee, H. On Food and Cooking, The Science and Lore of the Kitchen, Scribner, New York, NY. 2004. pg. 324-325

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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