



Dear Colleague,

Welcome to the Spring 2012 issue of the *Nutrition Frontiers*, a quarterly newsletter from the Nutritional Science Research Group (NSRG), Division of Cancer Prevention, NCI. In this issue, we highlight differences in eating broccoli and taking supplements, the potential cancer preventive effects of walnuts, and much more.

#### RESEARCH UPDATE: ON THE CLINICAL FRONT

##### Broccoli Supplements not Equivalent to Eating the Real Thing



A recent study explored whether broccoli supplements have the same bioavailability as eating broccoli. The isothiocyanates (ITCs) in broccoli are hydrolyzed by enzymes, myrosinases, that are naturally contained in fresh broccoli; supplements do not generally contain these enzymes. [Clarke and colleagues](#) performed a small cross-over study in which subjects consumed fresh broccoli sprouts and then the equivalent dose of broccoli supplements that did not have myrosinase. Bioavailability of the ITCs, sulforaphane and erucin, were

dramatically lower in blood and urine when broccoli supplements were consumed compared to eating broccoli sprouts. Additionally, polymorphisms in the *GSTP1* enzymes were not found to affect the metabolism or excretion of these ITCs from either source. Taking broccoli supplements may not produce the equivalent plasma concentrations of the bioactive ITCs metabolites compared to eating broccoli sprouts.

#### RESEARCH UPDATE: WHAT'S NEW IN BASIC SCIENCE

##### Walnuts May Reduce Risk of Breast Cancer

Omega-3 fatty acids, phytoosterols, and the antioxidants in walnuts potentially contain cancer preventive properties. To determine the cancer preventative effects of walnuts in breast cancer, [Hardman and colleagues](#) randomly fed a diet of either walnuts or no walnuts (only corn oil as the dietary fat) to C(3)1 Tag mice and to their hemizygous pups. Walnut consumption by mother and



##### Last lecture

"Omega-3 Mediators and Inflammation"

by Dr. Charles Serhan

[View here](#)

##### Career Announcement

###### [Senior Scientist](#)

NSRG, DCP, NCI

Serve as a technical and scientific expert in the area of nutrition and the microbiome as it relates to human health and cancer risk, and to identify on-going implementation needs, develop resources for the scientific community, and identify research gaps and scientific opportunities related to nutrition and cancer prevention and the development of initiatives to address these gaps and opportunities.

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offspring significantly reduced mammary gland cancer development, multiplicity and size. Walnut exposure caused multiple gene alterations in the NF $\kappa$ B cell signaling pathways associated with proliferation and differentiation of mammary epithelial cells. There was a 40% reduction in tumor incidence and 44% reduction in multiplicity in mice that had some walnut exposure compared to no exposure. Further research is warranted on the mechanism of action and active ingredient for tumor suppression in walnuts.

#### SPOTLIGHT: MAARTEN BOSLAND



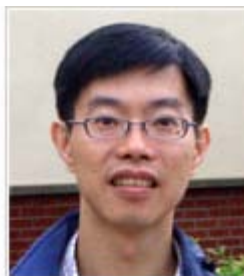
**Maarten C. Bosland, DVSc, PhD**, is Professor and Director of Graduate Studies in the Department of Pathology at the University of Illinois at Chicago College of Medicine. He graduated from the University of Utrecht (The Netherlands) with a DVSc and PhD in Experimental Pathology. He was a Research Scientist-Toxicologic Pathologist at TNO, Zeist, The Netherlands and was

on the Faculty of the Department of Environmental Medicine of New York University School of Medicine. Dr. Bosland's research focuses on prostate cancer, chemoprevention, and hormonal carcinogenesis. He was recently awarded an R03, [The Effects of SOD2 Genotype, Oxidative Stress, ER, and Genistein on Prostate Cancer](#).

[Read more »](#)

#### SPOTLIGHT: NGAI CHUNG NEVILLE TAM

**Neville Tam, PhD** is a Research Assistant Professor in the Department of Environmental Health at University of Cincinnati. Dr. Tam's interest in prostate cancer began when he was at University of Hong Kong, where he earned his MPhil and PhD degrees. He completed postdoctoral training at University of Massachusetts Medical School, where he became Research Assistant Professor. His research focuses on: 1) The early events of prostate carcinogenesis, with emphasis on the roles of physiological/environmental estrogens; 2) The mechanisms by which dietary phytoestrogens prevent prostate cancer initiation and development. He was recently awarded a R21 for his project titled, [Gene Methylation Targets for Prostate Cancer Prevention by Early Soy Exposure](#).



[Read more »](#)

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#### Upcoming Events

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May 09-12, 2012

[Molecularly Targeted Therapies: Mechanisms of Resistance](#),

American Association for Cancer Research  
San Diego, CA

May 29-31, 2012

[Metabolism, Diet and Disease, BioMed Central](#)

Washington, DC

June 01-05, 2012

[ASCO Annual Meeting](#), American Society of Clinical Oncology  
Chicago, IL

June 22-24, 2012

[Advances and Controversies in Clinical Nutrition 2012](#),

American Society for Nutrition  
Chicago, IL

June 25-28, 2012

[IFT Annual Meeting and Food Expo](#), Institute of Food

Technologists  
Las Vegas, NV

June 25-28, 2012

[2012 International Conference of the Metabolomics Society](#)

Washington, DC

October 16-19, 2012

[Eleventh Annual International Conference on Frontiers in Cancer Prevention Research](#),

American Association for Cancer Research  
Anaheim, CA

November 01-02, 2012

[2012 AICR Annual Research Conference on Food, Nutrition,](#)

Physical Activity and Cancer  
Washington, DC

## DID YOU KNOW?

### Edible Flowers Offer Health and Vitality



Not only are they pretty in your garden, edible flowers, such as Marigolds and the peppery-flavored Nasturtium, contain vitamin C and phenolic compounds. Other popular edible flowers are pansies and violas, which offer a subtle hint of grape, chive blossoms, are suggestive of a mild, sweet onion flavor, and fragrant sweet roses. The cucumber-tasting borage, chamomile, daisies, lavender, lemon, lovage, mimosa, chrysanthemums, geraniums, jasmine, lilacs, and violets are all edible.

Add color, garnish and nourishment to your soups, salads and desserts with edible flowers.

References:

[Chem Cent J. 2012 April 27;6\(1\):35](#)  
<http://www.foodfacts.com/food-ingredients/Nasturtium-Officinale/4813>  
<http://www.foodterms.com/encyclopedia/flowers-edible/index.html>

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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