



# NUTRITION FRONTIERS

A newsletter of the Nutritional Science Research Group

Winter 2013

Volume 4, Issue 1

Dear Colleague,

Welcome to the Winter 2013 issue of the *Nutrition Frontiers*, a quarterly newsletter from the Nutritional Science Research Group (NSRG), Division of Cancer Prevention, NCI. In this issue, you will learn about measuring skin carotenoid status in children to determine fruit and vegetable intake, how IP6 in high fiber diets may slow the growth and progression of early stage prostate cancer, and more.

## RESEARCH UPDATE: ON THE CLINICAL FRONT

### Assessing Fruit and Vegetable Intake in Children: A Novel Approach



Resonance Raman Spectroscopy (RRS) is a non-invasive method of measuring carotenoid status in skin. RRS uses a visible blue light to detect the unique structure of carotenoid molecules, colorful plant pigments which serve as a biomarker of fruit and vegetable intake. RRS had been validated in healthy adults against skin biopsies and plasma. [Scarmo and colleagues](#) recently tested the feasibility of RRS in

preschool children. A cross-sectional study of economically disadvantaged preschoolers had their skin carotenoid status assessed by RRS in the palm of the hand. A significant positive association was observed between total skin carotenoid status and parent-reported fruit and vegetable preference and intake, measured by questionnaires. Lower carotenoid status was observed among younger children, those participating in the US Supplemental Nutrition Assistance Program, and those with greater adiposity. Although RRS may be a useful biomarker of usual carotenoid status in adults and children, results of controlled intervention studies are needed to evaluate RRS changes in response to changes in fruit and vegetable intake.

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

### High Fiber Diet Enriched with IP6 Suppresses Growth & Progression of Early Stage Prostate Cancer

The incidence and mortality

## Announcements

Welcome the NSRG's newest member, Roberto Flores, PhD, MS, MPH



Dr. Flores earned his MS and PhD in Nutritional Sciences from the University of Arizona and

completed a MPH from the Johns Hopkins School of Public Health. His research has focused on the transitional and quality control studies for molecular screening of HPV infection and national HPV vaccine implementation and cervical cancer screening programs in India. Dr. Flores joined the NCI as a Cancer Prevention Fellow in 2008 studying the association of the GI microbiota, estrogen recirculation and microbial metabolism in relation to breast cancer risk, and changes in the oral microbiome with smoking. Roberto can be contacted at [floresr2@mail.nih.gov](mailto:floresr2@mail.nih.gov).

Frontiers in Nutrition and Cancer Prevention: Online CME Series, Archived Webinar: [Exploring the Microbiome of Cancer Prevention: A Closer Look at Probiotics, Prebiotics, and Synbiotics](#)

The Human Microbiome, Diet,

of prostate cancer is lower in Asian compared to Western countries. The clue may be in the diet. Inositol hexaphosphate (IP6) is an active constituent of high fiber diet foods such as legumes, cereals, nuts and soybean and is a ubiquitous component of the Asian diet. [Raina et al.](#) examined effects of IP6 on prostate tumor development in male TRAMP mice by feeding 1%, 2%, or 4% concentrations of IP6 in drinking water. Results showed 2 % feeding significantly decreased prostate tumor volumes, inhibited the development of new vascularization to the prostate tumor, decreased the expression of glucose transporter GLUT-4 protein, a protein instrumental in transporting glucose; and increased levels of phospho-AMP active kinase. These results suggest IP6 deprives the tumor from making new blood vessels which supply energy and slows the rate glucose is metabolized by prostate tumors. A high fiber diet may hold the potential to suppress growth and progression of prostate cancer in individuals diagnosed in the early stages.



#### SPOTLIGHT: JOHN DIGIOVANNI



**John DiGiovanni, PhD** received his BS and PhD from the University of Washington and completed postdoctoral work at the McArdle Laboratory for Cancer Research, University of Wisconsin. Dr. DiGiovanni is Professor in the Division of Pharmacology and Toxicology, College of Pharmacy and the Department of Nutritional Sciences at the University of Texas at Austin. He also holds the Coulter R. Sublett Endowed Chair in

Pharmacy. Dr. DiGiovanni's research focuses on the mechanisms associated with dietary energy balance on tumor development, from calorie restriction to diet-induced obesity. His work has identified growth factor signaling pathways that are altered in epithelial tissues by dietary energy balance status. He is trying to identify phytochemicals that mimic the effects of calorie restriction. He was recently awarded a R01 entitled [Anti-Promoting Effects of Triterpenes Alone or Combined with Other Phytochemicals](#).

[Read more »](#)

#### SPOTLIGHT: MARC BISSONNETTE

**Marc Bissonnette, MD** is an Associate Professor in the Department of Medicine Section of Gastroenterology at the University of Chicago. He received his BS in Physics from Purdue University and his MD from the University of Chicago. After serving active duty in the United States Navy, he completed a residency in Internal Medicine and GI fellowship at the

and Health - Workshop Summary is available from the IOM. [Click here.](#)

*NCI Extramural Community is moving to a new location.* While NCI's clinical program will remain on the NIH campus, the Shady Grove location will accommodate approximately 2,000 NCI staff who occupy the Executive Plaza campus and the Helgeman Court building. The move began in February and will occur over a 6 month period; the Division of Cancer Prevention is slated to move in May. The new site is located about six miles north of Executive Plaza location.

---

#### Upcoming Events

---

March 19, 2013

[Stars in Nutrition and Cancer lecture series](#), "Micronutrients and Cancer Prevention: A Complex World" by Dr. Susan Taylor Mayne  
NIH Main Campus  
Bethesda, MD

April 6-10, 2013

[American Association for Cancer Research Annual Meeting](#)  
Washington, DC

April 20-24, 2013

[Experimental Biology](#)  
Boston, MA

May 7-8, 2013

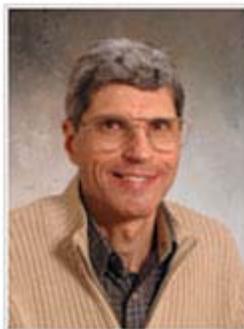
The Food Forum Workshop on Sustainable Diets: [Food for Healthy People and a Healthy Planet](#)  
Washington, DC

---

#### Quick Links

---

- [Funding Opportunities](#)
- [Nutrition Fact Sheets](#)
- [Nutritional Science Research Group](#)
- [Division of Cancer Prevention](#)
- [National Cancer Institute](#)



University of Pennsylvania. He completed a postdoctoral fellowship at the National Institutes of Diabetes and Digestive and Kidney Diseases, NIH. Dr. Bissonnette holds a patent on fluorinated vitamin D analogs as colon cancer chemopreventive agents. His research interests include growth factor signals and diet in colonic carcinogenesis and chemoprevention and the roles of stroma and epigenetic regulation including microRNAs in tumorigenesis. He was recently awarded a RO1 entitled [\*Roles of EGFR and miR-143/miR-145 in Western Diet-Promoted Colonic Tumorigenesis.\*](#)

[Read more »](#)

**Nutrition Frontiers  
Newsletter**

→ [View Past Issues](#)

## DID YOU KNOW?

### Coffee Can Be Lethal?



Coffee is the second most traded commodity in the world. But do not let your go-to morning drink fool you. A toxic dose of caffeine is about 68 mg per pound of bodyweight, which equates to about 80 to 100 cups in one sitting for an average person! More likely, drinking too much caffeine causes jitteriness and irritability.

Although radical consumption of caffeine can be dangerous, moderate coffee intake, about three cups per day, may be beneficial to your health. Aside from providing energy and alertness, coffee is a major source of phenolic compounds and may convey protection against the development of cardiovascular and metabolic disease and certain cancers.

So do not be afraid enjoy your morning cup of Joe, or run to Starbucks for a pick-me-up during the day. Just don't drink 100 cups for breakfast!

Calculate how much coffee could kill you using this online calculator:

<http://www.energyfiend.com/death-by-caffeine>

#### References:

Cornelis MC. *Prog Mol Biol Transl Sci* 2012;108:293.

Grotto, D. 101 Foods That Could Save Your Live, Bantam Books, NY, 2007.

Jamie H. Choi, et al. *J Caffeine Res* 2011;1: 29.

Sincerely,

*Your friends at the Nutritional Science Research Group*

Division of Cancer Prevention  
National Cancer Institute

Are you enjoying this newsletter? [Tell us](#) what you want. If you would like to [unsubscribe](#) to the *Nutrition Frontiers* newsletter, please email us. Please consider [forwarding this newsletter](#) to your colleagues and friends.