

# JUST ASK FOR WHOLE GRAINS

*November 5-7, 2007, Kansas City*

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## WHOLE GRAINS AND HEALTH



Whole grain research continues to show that the phytonutrients, vitamins, minerals, antioxidants and fiber in whole grains reduce risk of heart disease, strokes, certain cancers and obesity. Because of this compelling evidence, the 2005 Dietary Guidelines recommend that all adults increase their consumption of whole grains, on average, threefold.

This section contains several references on whole grains and health, along with information about the U.S. government's policies on whole grain health claims and labeling.

### **Fact Sheet: Whole Grains Made Easy**

- This at-a-glance reference on whole grains and health was created by the Whole Grains Council in early 2007, in conjunction with the American Dietetic Association and the Wheat Foods Council. It now serves as the ADA's primary reference on whole grains.

### **Recent Health Studies on Whole Grains**

- A sampling of recent research studies, adding to the weight of evidence supporting the health benefits of whole grains

### **Government Regulation and Policy**

- Summary of Health Claims allowed in the U.S., UK and Sweden
- Review of the confusing patchwork of government policies

### **Scientific Advisors to the Whole Grains Council**

- Thumbnail biographies of the nationally-known experts who support and advise the Whole Grains Council on scientific matters



# NUTRITION

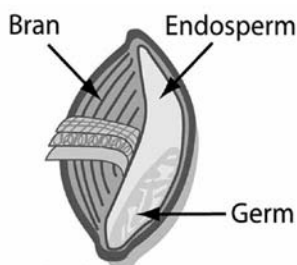
## FACT SHEET

### Whole Grains Made Easy

In the past, whole grains were thought to provide nothing more than fiber. However, new research reveals that whole grains offer vitamins and minerals, plus high levels of antioxidants and other healthy plant-based nutrients.

Whole grains contain protective antioxidants in amounts near or exceeding those in fruits and vegetables. They also provide some unique antioxidants not found in other foods. Corn, for example, has almost twice the antioxidant activity of apples. Wheat and oats almost equal broccoli and spinach in antioxidant activity.

Research continues to turn up new evidence on the benefits of whole grains. We've known for years that the fiber in whole grain helps promote digestive health. More recently, studies have shown that eating more whole grains may help reduce the risk of heart disease, cancer and diabetes. New studies published in 2005 and 2006 show that whole grains may lower triglycerides, improve insulin control, help with weight management, and slow the buildup of arterial plaque.



#### What Is a Whole Grain?

All grains start out as whole grains. If, after milling, they keep all three parts of the original grain—the starchy endosperm, the fiber-rich bran, and the germ—in their original proportions, they still qualify as whole grains.

#### DAILY RECOMMENDED GRAIN SERVINGS FOR INACTIVE AMERICANS

Age	Minimum Whole Grains		Total Grains Per Day	
	Females	Males	Females	Males
2-3	1.5	1.5	3	3
4-8	2	2.5	4	5
9-13	3	3	5	6
14-18	3	3.5	6	7
19-30	3	4	6	8
31-50	3	3.5	6	7
51+	3	3	5	6

Source: MyPyramid.gov

#### Make Half—or More—of Your Grains Whole

The 2005 Dietary Guidelines recommend that Americans “make half their grains whole.” This means most people should consume three or more servings of whole grains each day. This is a minimum—the Dietary Guidelines say that “more whole grains up to all the grains recommended may be selected.” The chart above shows recommendations for typically inactive Americans. Active people would need even more whole grains. Four, five, even six servings of whole grains daily are not unreasonable.

*The contents of this fact sheet have been reviewed by the American Dietetic Association's Fact Sheet Review Board. The appearance of this information does not constitute an endorsement by ADA of the sponsor's products or services. This fact sheet was prepared for the general public. Questions regarding its content and use should be directed to a registered dietitian.*

## Whole Grains are Healthy, Convenient and Delicious

Consumers may still worry that finding and preparing whole grains could be difficult. However, new whole grain foods introduced in the past two years provide plenty of options to appeal to everyone's taste, budget and busy schedule.

Americans today can enjoy a broad range of whole grain ready-to-eat cereals, white whole wheat bread, 90-second brown rice, instant oatmeal, popcorn, whole grain crackers, whole grain chips, and many more 21st century choices.

## Family-Friendly Whole Grain Ideas for Every Meal

	BREAKFAST	LUNCH	SNACK	DINNER
MONDAY	Whole grain bagel	Stuffed whole grain pita	Popcorn	Brown rice with a stir fry
TUESDAY	Whole grain raisin toast	Sandwich on rye bread	Whole grain crackers	Whole grain pasta with your favorite sauce
WEDNESDAY	Whole grain ready-to-eat cereal	Whole grain wrap	Oatmeal cookie	Tacos in corn tortillas
THURSDAY	Oatmeal	Sub sandwich on whole grain roll	Whole grain chips	Wild rice
FRIDAY	Whole grain English muffin	Whole grain veggie burger	Whole grain granola bar	Bulgur pilaf
SATURDAY	Whole grain waffles	Hamburger on whole grain bun	Whole grain graham crackers	Homemade pizza on whole grain pita crust
SUNDAY	Whole grain pancakes	Barley mushroom soup	Whole grain pretzels	Whole grain cornbread

## What is a Serving of Whole Grain?

The Dietary Guidelines define a serving (or "ounce-equivalent") of grain as 1 slice of 100% whole grain bread, a cup of 100% whole grain cereal, or 1/2 cup of 100% whole grain hot cereal, cooked pasta, rice or other grain. As Americans begin to appreciate the nuttier, fuller taste of whole grains, many start with products made with a mix of whole and enriched grains. In these foods, servings are counted differently: 16 grams or more

of whole grain ingredients counts as a full serving. This means most Americans need 48 grams or more of whole grains daily. A growing number of foods are being labeled with information about whole grain content (often in grams), making it easier for consumers to identify whole grain products. Foods made only with bran are not whole grain products. High fiber is not always equivalent to whole grain. Check the ingredient list for whole grains among the first ingredients.

For a referral to a registered dietitian and for additional food and nutrition information visit  
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# WHOLE GRAINS REDUCE HEALTH RISKS



The pace of research linking whole grains to reduced risk of chronic diseases has accelerated over the past year and a half, further confirming the benefits for risks like heart disease, and expanding into new areas from gum disease to asthma.

Below and on the following pages we've listed just some of the recent research, organized by health issues.

## Asthma

- A team from the Dutch National Institute of Public Health and the Environment found that children who ate whole grains were 54% less likely to develop asthma and 45% less likely to develop wheezing than children who did not eat whole grains.  
*Thorax, December 2006; 61(12):1048-53*

## Diabetes

- Dr. Rob van Dam and colleagues at the Harvard School of Public Health studied over 40,000 African-American women over eight years, and found that eating more whole-grains and low-fat dairy foods reduced the likelihood of developing type 2 diabetes.  
*Diabetes Care. July 2007;30(7):1753-7*
- Also at the Harvard School of Public Health, researchers led by JS de Munter pooled data from six cohort studies including 286,125 participants, and found that a two-servings a day increment in whole grain consumption was associated with a 21% decrease in risk of type 2 diabetes.  
*PLoS Medicine, August 2007; 28;4(8):e261*
- Swedish researchers at Lund University have determined that certain whole grain products can help control blood sugar for up to ten hours. A team led by Anne Nilsson tested four types of grain, and found that barley had the strongest effect, but that wholegrains in bread controlled blood sugar better than grains in boiled porridge.  
*European Journal of Clinical Nutrition. May 23, 2007*
- A team of German researchers led by Matthias Schulze followed over 16,000 adults for a period of seven years and found that those who ate the most cereal fiber had a 27% lower risk of developing diabetes than those who ate the least. No link was noted with total fiber – just with *cereal* fiber.  
*Archives of Internal Medicine. May 2007; 14;167(9):956-65*

### **Blood Pressure**

- USDA researcher Kay Behall and colleagues studied a small group of men and women as they followed a 10-week diet where all the grains were whole grains. The subjects, all of whom had slightly elevated cholesterol, showed significant reductions in both systolic and diastolic blood pressure when whole grains were added. They also lost about 1kg during the course of the study— although the whole grain diet was higher in calories than a control low-fat diet with refined grains used at the start of the study.  
*Journal of the American Dietetic Assn., Sept. 2006; vol 106(9):1445-9*
- Researchers at Harvard studied nearly 30,000 people enrolled in the Women's Health Study. Lu Wang's team found that, over ten years, those who ate the most whole grains had an 11% lower chance of developing high blood pressure.  
*Am. Journal of Clinical Nutrition, Aug 2007; vol 86(2):472-9*

### **Gum Disease**

- The risk of periodontitis, a serious inflammation of the gums that is the major cause of tooth loss in adults, may be reduced by eating more whole grains. Anwar Merchant and colleagues at McMaster University in Ontario studied more than 34,000 men over a 14-year period, and concluded that three to four servings of whole grains daily "may be optimal to reduce periodontitis risk."  
*Am. Journal of Clinical Nutrition, June 2006; vol 83(6):1395-1400*

### **Weight Management**

- Researchers at the University of Rhode Island, in a six-month study headed up by Kathleen Melanson, found that whole grain cereals helped 180 overweight adults lose weight while increasing their consumption of fiber, magnesium and vitamin B-6.  
*Journal of the American Dietetic Assn. Sept. 2006;106(9):1380-8*
- A study of 150 college students found that higher whole grain intake was associated with lower BMI (Body Mass Index). Overall, students averaged only 0.7 servings per day of whole grain, and authors, led by Nick Rose, noted that low availability of whole grains on and around campus could be responsible for low intake.  
*Journal of Nutrition and Education Behavior March 2007; Vol. 39 (2); 90-94*

### **Cancer**

- A team of researchers led by Arthur Schatzkin studied data for almost half a million middle-aged men and women enrolled in the NIH-AARP Diet and Healthy Study, to learn whether fiber intake and/or whole grains might reduce the risk of colorectal cancer. In this analysis, total dietary fiber intake was not associated with a reduced risk of colorectal cancer, but both grain fiber and whole grains were shown likely to reduce the risk of colorectal cancer.  
*Am. Journal of Clinical Nutrition, May 2007; vol 85(5):1353-1360*
- A UK study suggests that women who eat large amounts of fiber could cut breast cancer risk in half. The effect was greatest on pre-menopausal women, which Janet Cade and her team at Leeds University say may be because fiber affects the way the body processes and regulates the female hormone estrogen.  
*International Journal of Epidemiology, April 2007; 36(2):431-8.*

## Heart / Cardiovascular Disease

- Eating an average of 2.5 servings of whole grain foods each day can lower your risk of cardiovascular disease by almost one-quarter. That's the finding of a seven-study meta-analysis of 285,000 men and women led by Philip Mellen of Wake Forest University. In light of this evidence, Mellen said, policy-makers, scientists and clinicians should "redouble efforts" to get people to eat more whole grains.  
*Nutrition, Metabolism & Cardiovascular Diseases, April 2007 online*
- Another study by Philip Mellen at Wake Forest University and colleagues measured atherosclerosis of the common carotid artery, and its progression over five years. Mellen's team found that, among the 1178 men and women in the study, those who ate more whole grains had less unhealthy arteriosclerotic thickening of the common carotid artery.  
*Am. Journal of Clinical Nutrition, June 2007; vol 85(6):1495-1502*
- After following 21,376 male physicians for almost 20 years, Luc Djoussé and J. Michael Gaziano at Harvard found that those eating two to six servings of whole grain cereal a week reduced their risk of heart failure 22%, while those eating whole grains daily reduced risk by 28%. For this study, cereals with at least 25% whole grain or bran by weight were classified as whole grain.  
*Archives of Internal Medicine, October 2007; 167: 2080-2085.*

## Inflammation

- That habitual whole grain consumption reduces the risk of both cardiovascular disease and diabetes has been well documented. Now, a recent study by the University of Minnesota's David Jacobs (Chairman of the WGC Scientific Advisory Committee) shows that eating whole grains confers an even greater risk-reduction in mortality from inflammatory diseases. Jacobs and his colleagues followed more than 27,000 post-menopausal women for 17 years and concluded that "oxidative stress reduction by constituents of whole grain is a likely mechanism for the protective effect."  
*Am. Journal of Clinical Nutrition, June 2007; vol 85(6):1606-1614*
- C-reactive protein (CRP), a known marker for inflammation, is increasingly accepted as a good predictor of both type 2 diabetes and cardiovascular disease. A high-fiber diet – whether from foods like whole grains, fruits and vegetables or from fiber supplements – can cut CRP levels up to 40%. Ironically, the effect was more pronounced in healthy lean people than in obese ones, according to lead researcher Dana King at the Medical University of South Carolina.  
*Archives of Internal Medicine, March 2007; 12;167(5):502-6*



## WHOLE GRAIN HEALTH CLAIMS, WORLDWIDE

Country	Wording	Qualifying products
USA	<b>Whole Grain, low fat</b> "Diets rich in whole grain foods and other plant foods and low in total fat, saturated fat, and cholesterol may reduce the risk of heart disease and some cancers." (1999)	Whole grain contains bran, germ and endosperm in the same relative proportion as the naturally occurring grain. 51 % whole grain by total weight. *
USA	<b>Whole Grain, moderate fat</b> "Diets rich in whole grain foods and other plant foods, and low in saturated fat and cholesterol, may help reduce the risk of heart disease." (2003)	Whole grain contains bran, germ and endosperm in the same relative proportion as the naturally occurring grain. 51 % whole grain by total weight. *
USA	<b>Cereal Fiber / Beta Glucan</b> "Soluble fiber from foods such as <i>[name of soluble fiber source, and, if desired, name of food product]</i> , as part of a diet low in saturated fat and cholesterol, may reduce the risk of heart disease. A serving of <i>[name of food product]</i> supplies ___ grams of the <i>[necessary daily dietary intake for the benefit]</i> soluble fiber from <i>[name of soluble fiber source]</i> necessary per day to have this effect."	Beta (Beta) glucan soluble fiber from oat bran, rolled oats (or oatmeal), and whole oat flour. Oat bran must provide at least 5.5% Beta-glucan soluble fiber, rolled oats must provide at least 4% Beta-glucan soluble fiber, and whole oat flour must provide at least 4% Beta-glucan soluble fiber or Psyllium husk with purity of no less than 95%. Later amended to include oatrim and barley as eligible sources of beta-glucan soluble fiber.

Country	Wording	Qualifying products
UK	"People with a healthy heart tend to eat more whole grain foods as part of a healthy lifestyle." (2002)	Whole grain contains bran, germ and endosperm in same relative proportion as the naturally occurring grain. 51% whole grain by total weight
Sweden	"A healthy lifestyle and a balanced diet rich in whole grain products reduce the risk for (coronary) heart disease. Product X is rich in whole grains (contains Y % of whole grain)." (2003)	Whole grain refers to intact or ground whole seed kernels of wheat, oats, barley and rye. Product must contain at least 50% whole grain by total weight. *

\* both the U.S. and Sweden require that products also meet additional requirements such as low sodium, low fat, etc.

Source for U.S. claims: <http://www.cfsan.fda.gov/~dms/flg-6c.html>

Source for UK and Swedish claims: <http://www.healthgrain.org/pub/chapter-seven.php>



# WHOLE GRAINS: A PATCHWORK OF POLICIES

The Whole Grains Council strongly supports any efforts of the US government to work toward harmonizing the many conflicting government policies and regulations on the labeling and description of whole grains.

Following are some potential sources of confusion to consumers which could be addressed:

## **The FDA Whole Grain Health Claim**

Overall, the FDA Whole Grain Health Claim is a positive force for whole grains and health. But it has two main limitations that should be addressed:

### **1) Some foods qualify more easily than others**

To qualify for this claim, foods must contain **at least 51% whole grain by total weight** of ingredients, so products with high moisture levels and a variety of heavy nongrain ingredients have difficulty qualifying.

A whole grain raisin bread, for instance, may have 40% of its weight made up of moisture, with additional weight from raisins, and a small amount of oil or honey. The whole grain flour could easily be less than 51% of the total weight – even when the bread is made with NO refined grains whatsoever.

A cracker, pasta, or dry cereal, in contrast, could include a high proportion of refined flour and still qualify as having 51% or more of its weight as whole grains.

### **2) Some grains qualify more easily than others**

To qualify for this claim, whole grain ingredients must also contain 11% or more fiber. Whole grains vary widely in fiber content, and many have less than this level of fiber. Since qualifying foods must contain at least 51% whole grain, this means that each product overall must contain at least 5.6% (51%x11%) fiber. This level can be difficult for lower-fiber grains to reach, even when more than 51% of a product is whole grain.

Brown rice (3.5% fiber) does not qualify for this claim even when 100% of the product is whole grain – so a bag of brown rice cannot currently use the Whole Grain Health Claim. Products made with whole grain cornmeal (7.3% fiber) won't qualify unless they contain a lot more than 51% whole grain: for whole cornmeal, about 77% of the weight of the product must be whole grain to qualify.

### 51% of WHAT?

Another potential point of confusion stems from the fact that FDA and USDA both say products should be “51% whole grain” – but each agency defines this differently.

FDA: 51% of the **total weight of all ingredients** must be whole grain for the FDA Whole Grain Health Claim

USDA: 51% of the **weight of all grain ingredients** must be whole grain for various USDA programs

Example: A slice of bread weighing 35g contains 20 grams of grain ingredients. Moisture weight and a few other ingredients make up the remaining 15g. If three-quarters of the grain used to make this bread is whole grain, the product will qualify as “whole grain bread” in USDA’s eyes, but will not qualify for the FDA’s whole grain health claim.

### Serving Sizes Vary

The Dietary Guidelines, a joint project of USDA and HHS, use a different definition of a grain serving than does FDA, the agency under HHS which regulates most packaging. Here are some examples of official serving sizes for both agencies:

Product	FDA serving (RACC)	USDA serving (DG)
Bread	50 grams (~2 slices)	1 slice (~28g)
Cereal (cold, RTE)	15g-55g	1 cup
Cereal (hot, such as oatmeal)	1 cup prepared	1/2 cup prepared
Pasta (uncooked)	2 ounces	1 ounce
Rice or other cooked grains	45g dry (~1 cup cooked)	28g dry (~1/2 cup cooked)

As the table above shows, FDA servings, used on packaging, generally run about twice the size of USDA servings used in recommendations in the Dietary Guidelines.

### What’s an “Ounce-Equivalent?”

Recognizing that the word “serving” has many meanings, USDA sought to avoid it in the 2005 Dietary Guidelines, instead using the term “ounce-equivalent” as in “Eat three or more ounce-equivalents of whole grain daily.” This approach, while well-intentioned, has two major drawbacks:

1) Consumers don’t understand what it means. It’s not a catchy term: No mother will ever say to her child, “Have you had your ounce-equivalents of whole grain today?”

2) It applies *only to 100% whole grain foods*. Although foods with a mix of whole grains and refined grains are making a great contribution to increasing whole grain consumption, the Dietary Guidelines give no guidance on how to measure adequate consumption of these foods. A gram amount, as used in the Whole Grain Stamp, solves the problem.

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*The Whole Grains Council stands ready to work constructively with both USDA and FDA to harmonize these points of difference and potential confusion, so that consumers will receive clearer guidance on whole grain consumption. Recognizing that budget limitations and standard regulatory procedures make quick action difficult, the WGC will continue its own work to eliminate confusion, by guiding consumers with the universal standard of the Whole Grain Stamp.*

## SCIENTIFIC ADVISORS TO THE WHOLE GRAINS COUNCIL

Scientific Advisors to the Whole Grains Council support the work of the WGC through their ongoing research into the health benefits and the scientific properties of whole grains. They also assist the WGC and its members by answering questions from WGC staff and members, as well as from journalists.

Contact Courtney Davis, Director of Communications for Oldways and the Whole Grains Council, at 617-896-4888 or [Courtney@oldwayspt.org](mailto:Courtney@oldwayspt.org) to arrange an interview with any of our Scientific Advisors.

**DAVID R. JACOBS, PHD**, CHAIR OF THE WGC SCIENTIFIC ADVISORY COMMITTEE;  
PROFESSOR OF EPIDEMIOLOGY, UNIVERSITY OF MINNESOTA SCHOOL OF PUBLIC  
HEALTH (MINNEAPOLIS, MN)

*David received his BS in Mathematics from Hofstra and his PhD in Mathematical Statistics from Johns Hopkins. His research interests include cardiovascular disease epidemiology, biometry, diet, physical activity, low serum cholesterol and noncardiovascular disease, nutritional epidemiology and whole grains.*

**JAMES ANDERSON, MD**, PROFESSOR OF MEDICINE AND CLINICAL NUTRITION,  
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*Jim directs the Health Management Resources (HMR®) program (a weight loss program) and is director of the University of Kentucky's Metabolic Research Group. He founded the HCF Nutrition Research Foundation in 1979 to disseminate educational material and formed an exclusive network of physicians, the Obesity Research Network, which performs clinical research in the area of obesity. Jim divides his time between research, teaching, private practice and administration.*

**R. GARY FULCHER, PHD**, HEAD OF THE DEPARTMENT OF FOOD SCIENCE, UNIVERSITY  
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*Gary received his BA and MSc in biology from Carleton University in Ottawa, and his PhD in botany from Monash University in Australia. Gary was a Senior Research Scientist with Agriculture Canada and an adjunct professor at the School of Medicine at the University of Ottawa, before joining the faculty of the University of Minnesota in 1989. Gary was awarded the Lifetime Achievement Award: Food Structure and Function Division, by the American Oil Chemists Society, in 2002 and filled the General Mills Chair in Cereal Chemistry and Technology, Department of Food Science and Nutrition, at the University of Minnesota from 1989-2004. Gary is a fellow of the American College of Nutrition.*

**VICTOR FULGONI III, PHD**, PRESIDENT, NUTRITION IMPACT (BATTLE CREEK, MI)

*Prior to joining Nutrition Impact, Dr. Fulgoni worked for the Kellogg Company as Vice President of Food and Nutrition Research. At Kellogg he helped develop their long-term research program and was intimately involved in the company's research and regulatory efforts to gain health claim approval from the US FDA regarding soluble fiber from psyllium and the risk of heart disease. Dr. Fulgoni completed his Bachelors degree at Rutgers University and his Ph.D. at the University of Tennessee with a major in animal nutrition and a minor in statistics.*

**JUDITH HALLFRISCH, PHD**, NUTRITION CONSULTANT (BALTIMORE, MD)

*Judy received her MS and PhD in Nutritional Sciences from the University of Maryland. She was principal investigator of the Gerontology Nutrition Study of the Baltimore Longitudinal Study of Aging at the National Institute on Aging. Judy also spent many years at USDA's Beltsville Human Nutrition Research Center, where she studied the beneficial and detrimental effects of recent changes in the US diet on health and performance in humans and animals; examined interactions among macro nutrients, antioxidant vitamins, and minerals on bioavailability of nutrients and tested ARS-developed fat replacers in humans for acceptability and potential for reduction of risk for disease. Now retired from the USDA, Judy works as a private nutrition consultant.*

**JULIE MILLER JONES, PHD, CNS, LN**, ENDOWED CHAIR IN SCIENCE, COLLEGE OF ST. CATHERINE (ST. PAUL, MN)

*Julie received her BS from Iowa State and her PhD from the University of Minnesota. A gifted speaker and teacher, Julie has received St. Catherine's "outstanding faculty award" three times. Her research interests include women's issues (body image and osteoporosis), food safety, and whole grains and health.*

**PAMELA KEAGY, PHD**, NUTRITION CONSULTANT (LAFAYETTE, CA)

*Pam has recently retired from USDA's Western Regional Research Center in Berkeley California. While with USDA-WRCC she worked on many research projects including a study of total folate in cereal products. Since her retirement from USDA, she has been working as a private nutrition consultant and as chair of AACC's Approved Methods Committee, which is responsible for maintaining an active, appropriate and scientifically sound program for developing analytical methodology for use in cereal-related laboratories.*

**PAULINE KOH-BANERJEE, ScD**

*Pauline was most recently an Assistant Professor in the Department of Preventive Medicine, University of Tennessee Health Science Center. She received her ScD in nutritional epidemiology from the Harvard School of Public Health. Her research is focused on the role of dietary and lifestyle factors in the development of obesity and Type 2 diabetes, including the effects of carbohydrate quality. In her work at HSPH, she collaborated on the development of the first comprehensive whole grain database that quantifies whole grain, bran, and germ intakes in grams of consumption.*

**RUI HAI LIU, PHD, MD**, ASSOCIATE PROFESSOR, DEPT. OF FOOD SCIENCE, CORNELL UNIVERSITY (ITHACA, NY)

*Rui Hai Liu received his Ph.D. in Toxicology from Cornell University. He also holds a M.D. in Medicine and a M.S. in Nutrition and Food Toxicology from Harbin Medical School in China. His recent publications include an analysis of phytochemicals and antioxidant activity in different wheat varieties. His research program focuses on diet and cancer, effects of functional foods/ nutraceuticals on chronic disease risks and aging, active agents in herbal remedies for cancer and hepatitis and the health benefits of phytochemicals in fruits, vegetables and whole grains.*

**SIMIN LIU, MD, ScD**, PROFESSOR AND DIRECTOR, PROGRAM ON GENOMICS AND NUTRITION, DEPARTMENT OF EPIDEMIOLOGY, UCLA (LOS ANGELES, CA)

*In addition to his position at UCLA (above), Simin holds adjunct appointments as Professor of Epidemiology at Harvard and Professor of Public Health at Sun Yat-Sen University in China. Simin received his MD at the Jinan University School of Medicine, then earned his MPH and ScD degrees from Harvard's School of Public Health. Before joining the UCLA faculty, he worked at Harvard Medical School and the Harvard School of Public Health. His research in nutrition and health has been translated into public policy such as the Healthy People 2010 and the 2005 Dietary Guidelines. His seminal work in carbohydrate nutrition ultimately served as the scientific evidence in establishing regulatory and labeling guidelines for the FDA's whole grains and heart disease health claims.*

**LEN MARQUART, PHD, RD**, ASSISTANT PROFESSOR OF NUTRITION AND FOOD SCIENCE, UNIVERSITY OF MINNESOTA (MINNEAPOLIS)

*Len has a BS in nutrition from Syracuse Univ., and an MS and PhD from the University of North Carolina in Human Nutrition/Exercise Physiology. Before coming to UMN, he was Senior Scientist at General Mills' Bell Institute. His research interests and published papers are in the areas of whole grains and health; factors influencing barriers, motivations and consumption of whole grain foods; the effects of processing on taste, nutritional content and efficacy of whole grains.*

**LLOYD W. ROONEY, PHD**, PROFESSOR OF AGRONOMY AND OF FOOD SCIENCE & TECHNOLOGY, TEXAS A&M UNIVERSITY (COLLEGE STATION, TX)

*Lloyd has a BS and PhD from Kansas State University. The technology, nutrition, and processing of cereal-based food products is the main research focus of Lloyd's laboratory. He investigates processes to reduce fat content of snacks and other foods while maintaining desirable flavor and texture for consumer consumption, as well as genetic manipulation to develop new cereal varieties with improved processing quality and nutritional value. He also studies the interaction of starches and other components in foods and the effect of processing on the nutritional value of foods and feeds.*

**JOANNE SLAVIN, PHD**, PROFESSOR OF NUTRITION AND FOOD SCIENCE, UNIVERSITY OF MINNESOTA (MINNEAPOLIS)

*Joanne received her BS, MS and PhD from the University of Wisconsin-Madison, in dietetics and nutrition. She specializes in nutrition across the lifecycle, human nutrition, sports nutrition, dietary fiber, the role of diet in disease prevention, phytoestrogens from flax and soy, and whole grains. She continues to conduct human feeding studies that measure relevant biomarkers for chronic disease prevention.*