



## Experimental Biology Key Messages

### Overall Messaging on GFF’s Participation in Research

Grain Foods Foundation (GFF) is committed to sound science that elevates the nutritional contributions of grains in the diet. While GFF participated in scientific conferences in the past, the opportunity at the 2015 Experimental Biology conference in Boston is the first time that GFF-supported research will be presented.

- GFF worked with the nutrition research consulting firm Nutrition Impact to assess consumer consumption data sets with a keen eye toward grain consumption. Analysis of the data allowed GFF to address:
  - Grain foods in the overall diet and association with nutrient intake and health outcomes;
  - Grain foods patterns – dialing up or dialing down specific grain food servings and looking at the impacts on overall energy, nutrient intake and diet quality;
  - Cost of nutrients from foods, in particular grain foods, based on nutrients provided per dollar spent.

### Cluster Research

Researchers identified the most commonly consumed grain food patterns in US adults (19 years and older) and compared nutrient intakes, diet quality (as measured by the Healthy Eating Index), anthropometric and physiological parameters of those consuming various grain foods patterns to those not consuming grain foods.

Cluster analysis using data from What We Eat in America 2005–2010, identified eight unique grain foods patterns focusing on (1) mixed grains, (2) yeast breads and rolls, (3) quick breads, (4) pasta/cooked cereals/rice, (5) crackers/salty snacks), (6) cakes/cookies/pies, (7) cereals and (8) no grain foods.\*

Researchers found:

- Certain grain food patterns have better health profiles than those that do not eat any grain foods.
- Adults that eat yeast breads and rolls have lower total sugar intake when compared to those adults that eat no grains.
- Adults who eat certain grain food patterns (cereals, pasta, cooked cereals, rice, crackers, salty snacks, pancakes, waffles, and quick breads) have less saturated fat and increased dietary fiber intake in the diet.
- Adults that eat cereals, pasta/cooked cereals/rice and mixed grains have better overall diet quality when compared to those adults that eat no grain foods.
- Adults who eat pasta/cooked cereals/rice weigh nearly seven pounds less than adults who do not eat these grain foods.
  - In addition, they also have on average one-inch smaller waist size when compared to adults that eat no grain foods.

### **\*Food consumed by adults classified in the no grain foods cluster group.**

Age Group	Foods based on NHANES food code
Adults (19+ years old)	<ul style="list-style-type: none"> <li>• Water</li> <li>• Sugar-sweetened beverages (both cola and fruit-flavored)</li> <li>• Coffee</li> <li>• Fruits and vegetables (i.e., lettuce, bananas, apples)</li> <li>• French fried potatoes</li> <li>• Milk</li> <li>• Cheese</li> <li>• Potato chips</li> <li>• Beef</li> <li>• Chicken</li> </ul>

### **Modeling Research**

Researchers examined how changes in Dietary Guidelines for Americans' recommendations for grain intake could impact nutrient/energy intake for US adults. A modeling analysis was conducted within a 2000 kcal/d USDA food pattern where the USDA grain food composite was replaced with 10 different grain food combinations based on data from What We Eat In America 2005–2010. All patterns were compared versus USDA ideal and USDA typical food patterns.

- All 10 models examined provided less calories in comparison to the USDA typical food pattern (USDA typical contributed 2616 kilocalories compared to a range of 1884-2339 kilocalories from the 10 different grain combinations).
- Several grain patterns, including refined grains (bread, rolls, bagels, tortillas), contribute nutrient and energy intakes similar to USDA recommendations showcasing that indulgent and salty grains can be incorporated into a dietary pattern in a manner that is better than current dietary patterns.

More specifically, researchers found:

- Americans that follow a 2,000-calorie diet can consume one serving of whole grains and five servings of refined grains daily and still see positive health and nutrition end points.
  - While this pattern led to a slight (1.5%) increase in calories, it also had 2.5 percent less total fat and 1.7 percent less saturated fat in the overall diet.
  - Despite the increase in the 5.1 percent (89 mg) overall sodium in the diet, there's nearly a 70 percent increase in folate and 11.5 grams (47%) greater dietary fiber intake.
    - The average sodium intake for Americans is at 3700 mg/day. The current modeling analyses identified that Americans can select grain products that contribute less sodium to the diet. Folate is a critical nutrient for fetus development in the prevention of neural tube defects. This research shows that consuming one serving of whole grains and five servings of refined grains, including pasta and high fiber grain foods, resulted in a 68 percent increase in folate intake compared to the USDA ideal food pattern.
    - Currently, Americans are falling short of fiber in the diet with the average consumption of fiber only at 15 grams.
- While recommendations are encouraging more whole grains in the diet, most whole grain foods are not fortified in the US, which could mean that many Americans are missing out on nutrients that are contributed by fortified grain foods. Researchers found that when they compared the different models to USDA ideal, consuming only whole grains resulted in:
  - Five percent (102 kcal) less calories, nearly three percent (2.25 g) less total fat and almost two percent less (0.4 g) saturated fat;
  - In addition, the all-whole grain diets had nearly 50 percent (301 µg DFE) less folate, nearly 14 percent (237 mg) more sodium and almost (1.6 g) more dietary fiber.
- Researchers also wanted to look at diets where all servings were from refined grain foods. They found when compared against USDA ideal diets that:
  - Eating only all-refined grains provides less calories, less total fat and less saturated fat but also less dietary fiber and less folate.
    - Total calories decreased by nearly five percent (95 kcal), total fat reduced to two percent (1.6 g) and saturated fat decreased one percent (0.2 g);
    - Dietary fiber decreased 17 percent (4.2 g), folate was reduced to 26 percent (166 µg DFE) and sodium increased by nearly eight percent (131 mg).

### **Cost of Nutrients Research**

Researchers examined the cost of energy, nutrients and related substances in the American diet to define some of the most cost effective foods for providing these food components. The analyses focused on grain foods from NHANES 2003–2004 (since these are the only data USDA linked to costs) and also used USDA's 150 food categories to define grain food categories.

- For those 2+ years of age, six of the grain categories considered (out of 22) were especially cost effective in providing energy and nutrients to the American diet.
- Research showed that grain-based foods are a “nutrition bargain” for American consumers — especially within the rolls/buns and rice categories each ranking in the top five most cost effective food categories for 13–14 of the nutrients/substances evaluated, including dietary fiber, protein, folate, iron, magnesium, calcium, niacin and thiamin.

### **About Grain Foods Foundation**

Formed in 2004, Grain Foods Foundation (GFF) is a joint venture of members from the baking and milling industries, and allied suppliers. GFF is a supportive, expert group of thought leaders and advocates for ALL grain foods that believes everybody needs grain food to enjoy a happy and healthy life.

The Foundation is directed by a board of trustees and its funding is provided through voluntary donations from private grain-based companies, supplemented by industry associations.

To promote the common business interests of its members, GFF offers research-based information and resources to members, partners, influencers, policymakers and consumers through a comprehensive communications campaign, conferences, webinars, research tools, social media and more. Many campaign elements are available to members for use in individual promotional efforts.

Nutrition is always a hotly contested topic and Americans have been inundated with often conflicting, and sometimes suspect, nutritional advice. GFF is committed to bringing fact-based information and common sense to the consumer. We encourage consumers to follow the recommendation of nutrition experts and to make grains a foundational platform of their daily diets.

The Foundation is committed to nutrition education programming that is firmly rooted in sound science, being a strong advocate for our members, a resource for consumers and the media who want to learn more about the role of grains in a healthy lifestyle. For all of these reasons and more, GFF invites you to “Come to the Table” — for all things grains.

### **About Nutrition Impact**

Nutrition Impact is a consulting firm that specializes in helping food and beverage companies develop and communicate, science-based claims about their products and services. Nutrition Impact also publishes numerous nutrition related articles in the peer-reviewed literature every year.