Nutrition Smackdown!

How to Defend (and Promote) Your Great Food
Speakers

Dave Grotto  
*Nutrition Dude at Kellogg’s*

Jim Painter  
*Adjunct Professor*
Affiliation or Financial Disclosure

Jim Painter
Board Member/Advisory Panel/Consultant

• Present

• Past
  - Eastern Illinois University, University of Illinois –Champaign, American Heart Association Eat Well Task Force, California Raisin Marketing Board, Wonderful Pistachios, White Wave Foods, Davidson’s Safest Choice Eggs

• Honoraria
  - Honorarium underwritten by National Dairy Council
Affiliation or Financial Disclosure

• Dave Grotto
  - Employee: Kellogg Company
Objectives

- Appreciate why meal patterns include specific food groups in recommended amounts based by age group.
- Market inherent nutrient/phytochemical attributes of foods as well as the benefit of fortified foods to key stakeholders to better promote their meal and snack programs
- Debunk common myths about the quality and nutritional adequacy of foods they serve in K-12
Landscape
Schools’ Role in the Battle of Hunger, Food Insecurity & Obesity

1 IN 6

Nearly one in six children in America lives in households that struggle to put food on the table. That’s 13 million kids who aren’t getting the food they need\(^1,2\).

1 IN 5

In the United States, the percentage of children and adolescents affected by obesity has more than tripled since the 1970s.\(^1\) Data from 2015-2016 show that nearly 1 in 5 school age children and young people in the United States has obesity\(^3\).

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1. No Kid Hungry- Share Our Strength 2016
3. [https://www.cdc.gov/healthyschools/obesity/facts.htm](https://www.cdc.gov/healthyschools/obesity/facts.htm)
Hunger: More Than an Empty Belly

Studies have found that food insecurity has been associated with health problems for children that may hinder their ability to function normally and participate fully in school and other activities. Children who are food insecure:

• are more likely to require hospitalization.
• may be at higher risk for chronic health conditions such as anemia and asthma.
• may have poorer physical quality of life, which may prevent them from fully engaging in daily activities such as school and social interactions with peers.

Shortfall Nutrients Still Exist

**SHORTFALL NUTRIENTS**

**VITAMINS**
- A
- D*
- C
- E
- Folate

**MINERALS**
- Magnesium
- Potassium*
- Calcium*
- Iron
  (for teen girls/young women)

**OTHER**
- Dietary Fiber*

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1. 2015 DGA Scientific Report. U.S. population ages 2 years and older

* Nutrients of public health concern.
** - RTEC NHANES Mining 2017

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DGA 2020-2025 focus?

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Only half of parents surveyed see school meals as a quality and nutritious offering.

**PERCEPTION**

- Variety: Parents (48%) | Operators (64%)
- Quality: Parents (52%) | Operators (84%)
- Nutrition: Parents (55%) | Operators (86%)
- Creativity: Parents (40%) | Operators (45%)
- Delicious taste: Parents (47%) | Operators (71%)
- Homemade offerings: Parents (44%) | Operators (57%)
- Visual appeal: Parents (45%) | Operators (77%)
- Nutritional Information on meals & snacks: Parents (48%) | Operators (58%)
- Overall school meals: Parents (53%) | Operators (75%)

**REALITY**

"Energy, fat, saturated fat, sugar, vitamin C, and iron were significantly higher whereas protein, sodium, fiber, vitamin A, and calcium were significantly lower for packed lunches than school lunches."

Memory Lane
NSLP & SBP Timeline

1853: First free school lunch program - NYC

1946 – National School Lunch Act

1953: First free school lunch program

1966: School Breakfast Program Established. 80,000 children served for $573,000 the first year

1975: SBP becomes permanent

1986: Reimbursements increased & OVS introduced

1994: Team Nutrition & Healthy School Meals Initiative established.

2009: IOM Recommendations Published

2010: Healthy Hunger Free Kids Act

Jul, 2014:
• First sodium target
• All grains are whole grain-rich

Jan, 2012: FR

Jul 2016: SBP, NSLP, Competitive FR

July, 2018: Flexibilities for Milk, Whole Grains, and Sodium Requirements. IFR
New Nutrition Standards for School Meals: Primary objectives

- The new school meal standards aim to increase the availability of **fruits**, **vegetables**, and **whole grains** while limiting the amounts of fat, sodium and calories.
- More fruits and vegetables are required at both breakfast & lunch.
- By 2014, all grains served in schools must be “**whole grain-rich**”
- Limits on calories, sodium and fat.
Meal Occasions and Their Benefits
YOU Impact Lives Through YOUR Programs!

School breakfast

- **14.5 million** participate each day
- **1.7 million more** than 4 years ago

Thank YOU!
Breakfast Meal Pattern

• Calorie Ranges:

• Meals must contain:
  – 1 cup fruit
  – 1 cup milk
  – 1 oz equivalent of grains (7-10 per week)

• Sodium restrictions:

<table>
<thead>
<tr>
<th>Grades</th>
<th>Calories</th>
<th>Sodium</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-5</td>
<td>350-500</td>
<td>≤430 mg</td>
</tr>
<tr>
<td>6-8</td>
<td>400-550</td>
<td>≤470 mg</td>
</tr>
<tr>
<td>9-12</td>
<td>450-600</td>
<td>≤500 mg</td>
</tr>
</tbody>
</table>
Breakfast Rocks!

- Kids who ate breakfast generally showed higher daily consumption of fiber, calcium, vitamin D and potassium, as well as greater whole grain and lower added sugar intake compared to those who did not eat in the morning\(^1\).
- Children at nutritional risk, who start the day off right with breakfast, **may be better focused and have sharper memories when compared to breakfast skippers**\(^2\)

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Advantages of Breakfast

• Brain activity was more active in breakfast-eaters, fewer mistakes made.

• Less brain activity and more effort needed by breakfast skippers; more mistakes, too.

• Other studies show skippers have worse attention and poorer memories than those eating breakfast.

Published online 2013 Aug 6. Prepublished online 2013 Jun 25.
doi: 10.3389/fnhum.2013.00425

The effects of breakfast on behavior and academic performance in children and adolescents

Katie Adolpheus, Clare L. Lawton, and Louise Dye
Advantages of School Breakfast

### TABLE 4  Summary of findings for the chronic effects of SBPs on cognition in children and adolescents (n = 11 studies)

<table>
<thead>
<tr>
<th>Cognitive domain</th>
<th>Total studies</th>
<th>Advantage of SBP</th>
<th>No effect</th>
<th>Advantage of no SBP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention</td>
<td>8</td>
<td>4</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Memory</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Executive function</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Psychomotor function</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Language</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td>9</td>
<td>14</td>
<td>0</td>
</tr>
</tbody>
</table>

1 Studies assessed >1 cognitive domain and/or administered >1 measure within the same domain. SBP, school breakfast program.
Breakfast Eaters ROCK!

In or out of the classroom, making breakfast part of the school day is a good thing to do!

On average, students who eat school breakfast have been shown to...

https://bestpractices.nokidhungry.org/playbook/schools/learn-how-hunger

ACHIEVE
17.5% HIGHER SCORES ON STANDARDIZED MATH TESTS

ATTEND
1.5 MORE DAYS OF SCHOOL PER YEAR

These impacts have potential long-term economic benefits as well:

STUDENTS WHO ATTEND CLASS MORE REGULARLY ARE 20% MORE LIKELY TO GRADUATE FROM HIGH SCHOOL

HIGH SCHOOL GRADUATES TYPICALLY EARN $10,090 MORE PER YEAR AND ENJOY A 4% HIGHER EMPLOYMENT RATE
## Lunch Meal Pattern

### Calorie Ranges:

- **Meals must contain:**
  - ½ - 1 cup fruit
  - ¾ - 1 cup vegetables (assorted types)
  - 1 cup milk
  - 1 – 2 oz equivalents of grains (8-12 oz per week)
  - 1 – 2 oz equivalents of meat/meat alternates (8-12 oz per week)

### Sodium restrictions:

<table>
<thead>
<tr>
<th>Grades</th>
<th>Calories</th>
<th>Sodium</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-5</td>
<td>550-650</td>
<td>≤640 mg</td>
</tr>
<tr>
<td>6-8</td>
<td>600-700</td>
<td>≤710 mg</td>
</tr>
<tr>
<td>9-12</td>
<td>750-850</td>
<td>≤740 mg</td>
</tr>
</tbody>
</table>

### Sodium Restrictions by Grades

<table>
<thead>
<tr>
<th>Grades</th>
<th>Sodium</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-5</td>
<td>≤640 mg</td>
</tr>
<tr>
<td>6-8</td>
<td>≤710 mg</td>
</tr>
<tr>
<td>9-12</td>
<td>≤740 mg</td>
</tr>
</tbody>
</table>

### Meal Pattern

<table>
<thead>
<tr>
<th>Meal Pattern</th>
<th>Grades K-5</th>
<th>Grades 6-8</th>
<th>Grades 9-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruits (cups)</td>
<td>2½ (½)</td>
<td>2½ (½)</td>
<td>5 (1)</td>
</tr>
<tr>
<td>Vegetables (cups)</td>
<td>3¼ (¼)</td>
<td>3¼ (¼)</td>
<td>5 (1)</td>
</tr>
<tr>
<td>Dark green</td>
<td>½</td>
<td>½</td>
<td>½</td>
</tr>
<tr>
<td>Red/Orange</td>
<td>¼</td>
<td>¼</td>
<td>1¼</td>
</tr>
<tr>
<td>Beans/Peas (Legumes)</td>
<td>½</td>
<td>½</td>
<td>½</td>
</tr>
<tr>
<td>Starchy</td>
<td>½</td>
<td>½</td>
<td>½</td>
</tr>
<tr>
<td>Other</td>
<td>½</td>
<td>½</td>
<td>¾</td>
</tr>
<tr>
<td>Additional Veg to Reach Total</td>
<td>1</td>
<td>1</td>
<td>1½</td>
</tr>
<tr>
<td>Grains (oz eq)</td>
<td>8-9 (1)</td>
<td>8-10 (1)</td>
<td>10-12 (2)</td>
</tr>
<tr>
<td>Meats/Meat Alternates (oz eq)</td>
<td>8-10 (1)</td>
<td>9-10 (1)</td>
<td>10-12 (2)</td>
</tr>
<tr>
<td>Fluid milk (cups)</td>
<td>5 (1)</td>
<td>5 (1)</td>
<td>5 (1)</td>
</tr>
</tbody>
</table>
Participation Improves Nutrition!

“The majority of studies indicated that increasing access to healthy foods during school lunch improved students' dietary intakes.”

Smart Snacks
### Nutrition Standards for USDA Smart Snacks (FR)

Any food must meet **one** of the following:

- 50% or more whole grains by weight
- Have whole grains as the 1st ingredient
- Have fruit, vegetables, dairy or protein foods (beans, eggs, nuts, seeds, etc.) as the 1st ingredient
- Contains at least \( \frac{1}{4} \) cup of fruit and/or vegetable
- **...and also meet all** of this criteria:

<table>
<thead>
<tr>
<th>Calorie Limits</th>
<th>Fat Limits</th>
<th>Sodium Limits</th>
<th>Sugar Limits</th>
</tr>
</thead>
</table>
| • Snacks \( \leq 200 \)  
• Entrée \( \leq 350 \)   | • \( \leq 35\% \) calories from fat  
• \( \leq 10\% \) calories from sat fat  
• 0 grams trans fat  | • \( \leq 200\text{mg} \)  
• Entrées \( \leq 480\text{mg} \)  | • \( \leq 35\% \) sugar by weight |

Components
Milk
The Calcium Gap

• On average, Americans are getting only half the recommended three daily servings of dairy.

• Who’s not meeting current calcium recommendations?
  • 30% of 4-8 year olds
  • 90% of teenage girls
  • 70% of teenage boys
  • 90% of women

Nutrients of Public Concern

• Vitamin D: 25%
• Potassium: 7%
• Calcium: 30%
• Fiber
Fluid Consumption Among School-age Children
Dairy’s Role in Cardiovascular and Metabolic Health

“Moderate evidence also indicates that intake of milk and milk products is associated with a reduced risk of cardiovascular disease and type 2 diabetes and with lower blood pressure in adults.”

-2010 Dietary Guidelines Advisory Committee Report

“Consumption of dairy foods provides numerous health benefits, including lower risk of diabetes, metabolic syndrome, cardiovascular disease and obesity.”

-2015 Dietary Guidelines Advisory Committee Report
Chocolate Milk is High in Sugar and Less Nutritious!
Reduction in Nutrients as Added Sugar Increases

Chocolate Milk is Just as Nutritious as White Milk

- Usually sugar decreases nutrients, but not the case with chocolate milk
Decrease Sugar in School Flavored Milk Over 10 Years

Average Added Sugar in School Flavored Milk

- 2006-2007: 16.7 grams
- 2007-2008: 16 grams
- 2008-2009: 14.9 grams
- 2009-2010: 15.1 grams
- 2010-2011: 11.8 grams
- 2011-2012: 10.1 grams
- 2012-2013: 9.2 grams
- 2013-2014: 7.5 grams
- 2015-2016: 7.5 grams
Milk and Milk Alternates. Why Some and Not Others??

✓ Cow’s milk and soy count
✓ Cashew, almond, rice and coconut do not
Fortified Nutrients: Vitamin D & A

Figure 1: Fortified Nutrients: Vitamin D (IU) and Vitamin A (IU)
Potassium, Phosphorus, and Magnesium Comparison of Unflavored Milks and NDMAs
Protein Content (Grams) in Unsweetened Milk and NDMAs

- Skim Milk: 8 grams
- Soy: 7 grams
- Almond: 1 gram
- Cashew: 1 gram
- Coconut: 0 grams
- Rice: 0 grams
Added Sugar in Original Milks

Figure 4: Added Sugar in Original Milks

- Almond: 7 grams
- Cashew: 7 grams
- Coconut: 6 grams
- Rice: 9 grams

-Skim Milk: 4 grams
-Soy: 4 grams
1% Milk in Schools

Child Nutrition Programs: Flexibilities for Milk, Whole Grains, and Sodium Requirements

• A Rule by the Food and Nutrition Service on 11/30/2017 effective July 1, 2018

• “This interim final rule extends through school year 2018-2019 three menu planning flexibilities currently available to many Child Nutrition Program operators, giving them near-term certainty about Program requirements and more local control to serve nutritious and appealing meals to millions of children nationwide. These flexibilities include: Providing operators the option to offer flavored, low-fat (1 percent fat) milk in the Child Nutrition Programs;”

https://www.nationaldairycouncil.org/content/2017/1-chocolate-milk-is-back
Grain
We Don’t Eat Enough Whole Grains, Especially Kids!

The 2015–2020 DGA recommends that Americans consume at least one-half of their suggested total grains as Whole Grain.

Nationally representative intake data suggest that only 2–7% of Americans meet this recommendation\(^1\).

2. 2015-2020 DGA
Fiber’s Importance as a Shortfall Nutrient

Fiber Recommendations by Age and Gender

<table>
<thead>
<tr>
<th>Population</th>
<th>Daily Fiber Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children ages 1-3 years old</td>
<td>19 Grams</td>
</tr>
<tr>
<td>Children ages 4-8 years old</td>
<td>25 Grams</td>
</tr>
<tr>
<td>Young boys ages 9-13 years old</td>
<td>31 Grams</td>
</tr>
<tr>
<td>Young girls ages 9-13 years old</td>
<td>26 Grams</td>
</tr>
<tr>
<td>Teenage boys ages 14-18 years old</td>
<td>38 Grams</td>
</tr>
<tr>
<td>Teenage girls ages 14-18 years old</td>
<td>26 Grams</td>
</tr>
<tr>
<td>Young adult men ages 19-50 years old</td>
<td>38 Grams</td>
</tr>
<tr>
<td>Young adult women ages 19-50 years old</td>
<td>25 Grams</td>
</tr>
<tr>
<td>Men ages 50 years and older</td>
<td>30 Grams</td>
</tr>
<tr>
<td>Women ages 50 years and older</td>
<td>21 Grams</td>
</tr>
</tbody>
</table>


Fiber helps promote digestive wellness!
School Food Doesn’t Contain Whole Grain and Fiber!
Whole Grains: Smart Snacks V. Reimbursable

Smart Snacks
• Whole grain first ingredient
  OR
• ≥50% whole grains of total product weight

Reimbursable meals
• >50% of the grains must be whole grains for all grains in the product.
  – Whole grains per oz eq ≥ 8 grams
  – Package claim: FDA-approved whole grain health claim
  – Whole grain as the first ingredient
  – Cereal must also be fortified or 100% whole grain
Benefits of Grains

• Regular cereal eaters tend to have higher milk intakes and cereal is the #1 food fruit is added to\textsuperscript{1-3}. Consuming grain-based foods with milk for breakfast was linked with several health benefits\textsuperscript{4}.

• Like fruits and vegetables, whole grains contain a broad range of free radical fighting antioxidants, including polyphenols and carotenoids. Antioxidants are present mainly in the germ and outer layers of the grain\textsuperscript{5}.

4. Yanni Papanikolaou, American Society for Nutrition – Nutrition 2018
## Select Nutrient Intake
### 6-12 & 13-18 Year Olds (NHANES, 2009-2012)

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>6-12 Year Olds</th>
<th>13-18 Year Olds</th>
<th>13-18 Year Olds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No RTEC</td>
<td>RTEC</td>
<td>No RTEC</td>
</tr>
<tr>
<td><strong>Energy (kcal)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1927</td>
<td>1909</td>
<td>2030</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fiber (g)</strong></td>
<td>14</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td><strong>Total Sugar (g)</strong></td>
<td>123</td>
<td>128</td>
<td>130</td>
</tr>
<tr>
<td><strong>Calcium (mg)</strong></td>
<td>984</td>
<td>1142</td>
<td>1057</td>
</tr>
<tr>
<td><strong>Choline (mg)</strong></td>
<td>252</td>
<td>238</td>
<td>266</td>
</tr>
<tr>
<td><strong>Iron (mg)</strong></td>
<td>12</td>
<td>18</td>
<td>13</td>
</tr>
<tr>
<td><strong>Magnesium (mg)</strong></td>
<td>227</td>
<td>243</td>
<td>236</td>
</tr>
<tr>
<td><strong>Potassium (mg)</strong></td>
<td>2129</td>
<td>2312</td>
<td>2227</td>
</tr>
<tr>
<td><strong>Sodium (mg)</strong></td>
<td>3064</td>
<td>2993</td>
<td>3212</td>
</tr>
<tr>
<td><strong>Vitamin A, RAE (mcg)</strong></td>
<td>534</td>
<td>717</td>
<td>602</td>
</tr>
<tr>
<td><strong>Vitamin C (mg)</strong></td>
<td>71</td>
<td>86</td>
<td>74</td>
</tr>
<tr>
<td><strong>Vitamin D (mcg)</strong></td>
<td>5</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td><strong>Vitamin E (mg)</strong></td>
<td>7</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

Yellow box = significant statistical difference between RTEC & No RTEC
Red box = shortfall nutrients of concern
No RTEC = no RTEC consumed on recall day
RTEC = RTEC consumed at least once on recall day
Fruit & Vegetables
Fruit Intake in Children (2-18 y/o)

60% did not meet daily requirements
Raisins and Post-Meal Blood Glucose Levels

Mean Change in Blood Glucose (post-meal)

- % Change
- Fasting Blood Glucose
- HA1c
- Systolic Blood Pressure

<table>
<thead>
<tr>
<th></th>
<th>Snacks</th>
<th>Raisins</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPG</td>
<td>17 (5.7)</td>
<td>19 (-13)</td>
</tr>
<tr>
<td>Fasting</td>
<td>0.12</td>
<td>0</td>
</tr>
<tr>
<td>Blood Glucose</td>
<td>4.5</td>
<td>-4.2</td>
</tr>
<tr>
<td>HA1c</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic Blood Pressure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Bays, et al. 2015
Kids Eat Better with Canned Fruits and Vegetables

6 in 10 children don’t eat enough fruit

9 in 10 children don’t eat enough vegetables

*Source: www.mealtime.org
RESEARCH

Apple polyphenol extract improves insulin sensitivity in vitro and in vivo in animal models of insulin resistance

Manuel Manzano¹, María D Giron², José D. Vilchez², Natalia Sevillano², Nuri El-Azem¹, Ricardo Rueda¹, Rafael Salto² and Jose M. Lopez-Pedrosa¹

Fig. 1. Acute effects of APE (dose of 150 mg/kg bw) on the postprandial glycemic (a) and insulinemic (c) responses of maltodextrin in O2 and on the respective areas under the curve (b, d). Acute effects of APE (dose of 150 mg/kg bw) on the second-meal effect. Blood glucose (a) and area under the curve (b, d) after a first load of 150 mg APE/kg bw at 8:00 in the morning (simulating breakfast meal) and after a second load 1 g maltodextrin/kg bw (simulating lunch meal) 5 h later. Results are expressed as mean ± SEM, n = 10 in each group. (a), (d) p < 0.05 compared with control group.
Fig. 1. Acute effects of APE (dose of 150 mg/kg bw) on the postprandial glycemic (a) and insulinemic (c) responses of maltodextrin in CZR and on the respective areas under the curve (b, d). Acute effects of APE (dose of 150 mg/kg bw) on the second-meal effect. Blood glucose (a) and area under the curve (b) after a first load of 150 mg APE/kg bw at 8:00 in the morning (simulating breakfast meal) and after a second load 1 g maltodextrin/kg bw (simulating lunch meal) 5 h later. Results are expressed as mean ± SEM, n = 10 in each group, (a) p < 0.05 compared with control group.
Fiber and Satiety

- Raisins and grapes as an after-school snack decreases calorie intake and increases satiety – or feeling of fullness – compared to eating other snacks.

- Total daily calorie intake was lower when eating raisins than when eating chips and cookies.

Fresh Fruit and Vegetables are Superior to Frozen and Canned
Mineral Retention: Canned and Frozen Vs. Fresh

USDA Table of Nutrient Retention Factors Release 6, 2007; Accessed 12-31-17 http://www.ars.usda.gov/nutrientdata
Vitamin Retention Canned and Frozen Vs. Fresh

USDA Table of Nutrient Retention Factors Release 6, 2007; Accessed 12-31-17 http://www.ars.usda.gov/nutrientdata
The U.S. Dietary Guidelines for Americans recommends eating about 3 cups of legumes, including beans, per week. NSLP provides ½ of US DGA recommendations!

All types of beans—including black, cranberry, Great Northern, dark red kidney, light red kidney, white kidney, navy, pink, pinto, and small red—are good sources of protein, excellent sources of fiber, and naturally fat-free, sodium-free, and cholesterol-free. Many types are also good sources of potassium¹.

Meat/Meat Alternatives
Meat Alternatives. Good for Kids & the Planet!

Health

- Less saturated fat, cholesterol, calories
- 39% less fat
- 77% less saturated fat
- 96% less cholesterol

Sustainability

- Use less water and emit fewer greenhouse gases
- Saves Water
  - Up to 1,500 gallons per pound vs. beef
- Reduces Emissions
  - Livestock farming produces more greenhouse gas emissions than everyday road travel

Most consumers—led by Millennials and Gen Z—are eating more plant based foods now and want to eat more in the future.

- 67% Gen Z
- 72% Millennial
- 57% Gen X
- 46% Boomers

MorningStar Farms Spicy Black Bean Burger vs. ground beef patty
(4% lean/20% fat)
USDA National Nutrient Database

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Plant Protein is Inferior
If you are asked...

Myth 1: Eating soy increases breast cancer risk
Clinical studies support that soy does NOT adversely affect breast tissue as assessed by markers of breast cancer risk1-5

Myth 2: Soy has feminizing effects on men
There is no scientific basis that eating plant phytoestrogens raise estrogen levels in men6-8

Myth 3: Soy negatively impacts mineral status
Though soy is high in both phytate and oxalate - compounds that can inhibit mineral absorption – research suggests that soyfoods only modestly inhibit mineral absorption and moderate consumption of them does not impair mineral status9-12.

Myth 4: You can’t build muscle by eating soy.
Consuming the right amounts of any high quality protein - such as soy, whey, and casein - can stimulate skeletal muscle protein synthesis (MPS) either at rest or following exercise13-17.


Soy Myth Busting:
Protein Quality

Complete Protein:
A protein that supplies all the essential amino acids in the recommended amounts to meet the body’s needs is called a complete protein.

PDCASS: The protein digestibility corrected amino acid score is a method of evaluating the protein quality based on both the amino acid requirements of humans and their ability to digest it.

Based on this system, a variety of soy ingredients lead in protein quality amongst plant sources.

Soybeans contain more protein per 100g*. 

Source:
- Milk
- Egg white
- Soy protein concentrate
- Beef
- Cooked soybeans
- Cooked chickpeas
- Cooked black beans
- Pea protein concentrate
- Lentils
- Peanuts
- Rice protein isolate
- Hemp protein
- Whole wheat
- Seitan (wheat gluten)
- Almonds

<table>
<thead>
<tr>
<th>Food</th>
<th>PDCAAS</th>
<th>Source</th>
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</thead>
<tbody>
<tr>
<td>Milk</td>
<td>1</td>
<td>a</td>
</tr>
<tr>
<td>Egg white</td>
<td>1</td>
<td>b</td>
</tr>
<tr>
<td>Soy protein concentrate</td>
<td>.99</td>
<td>b</td>
</tr>
<tr>
<td>Beef</td>
<td>.92</td>
<td>b</td>
</tr>
<tr>
<td>Cooked soybeans</td>
<td>.95</td>
<td>a</td>
</tr>
<tr>
<td>Cooked chickpeas</td>
<td>.78</td>
<td>a</td>
</tr>
<tr>
<td>Cooked black beans</td>
<td>.71</td>
<td>a</td>
</tr>
<tr>
<td>Pea protein concentrate</td>
<td>.73</td>
<td>b</td>
</tr>
<tr>
<td>Lentils</td>
<td>.52</td>
<td>b</td>
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<tr>
<td>Peanuts</td>
<td>.52</td>
<td>a</td>
</tr>
<tr>
<td>Rice protein isolate</td>
<td>.45</td>
<td>c</td>
</tr>
<tr>
<td>Hemp protein</td>
<td>.51</td>
<td>d</td>
</tr>
<tr>
<td>Whole wheat</td>
<td>.40</td>
<td>b</td>
</tr>
<tr>
<td>Seitan (wheat gluten)</td>
<td>.25</td>
<td>b</td>
</tr>
<tr>
<td>Almonds</td>
<td>.33</td>
<td>e</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Food</th>
<th>Protein (g) per 100g</th>
<th>Protein (g) per cup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soybeans, cooked</td>
<td>12.35</td>
<td>22.23</td>
</tr>
<tr>
<td>Lentils, cooked</td>
<td>9.02</td>
<td>17.86</td>
</tr>
<tr>
<td>Chick peas, cooked</td>
<td>8.86</td>
<td>14.53</td>
</tr>
<tr>
<td>Green peas, cooked</td>
<td>5.36</td>
<td>8.50</td>
</tr>
<tr>
<td>Quinoa</td>
<td>4.40</td>
<td>8.14</td>
</tr>
<tr>
<td>Jackfruit</td>
<td>1.72</td>
<td>2.84</td>
</tr>
</tbody>
</table>

* USDA National Nutrient Database for Standard Reference Release 28

Source:

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Meat Alternate: Cheese and Yogurt

Cheese contains important nutrients such as calcium, phosphorous, protein, potassium, vitamins A and B12, riboflavin, phosphorus and magnesium.

Yogurt provides calcium, phosphorus, and riboflavin, and smaller amounts of other nutrients. Bacteria in fermented foods helps to produce vitamins like B12 and K and support gut health.

https://www.midwestdairy.com/nutrition-and-health/dairy-nutrition/cheese/
http://www.yogurtinnutrition.com/how-fermented-foods-make-you-feel-good/
Summary
This session provides one (1) CEU

- **Key Area:** Communications & Marketing-4000
- **Key Topic:** Using your #SocialMedia savvy to take the 2018 #SchoolBreakfastChallenge
This session provides one (1) CEU

- **Key Area:** Nutrition -1320
- **Key Topic:** Using your #SocialMedia savvy to take the 2018 #SchoolBreakfastChallenge

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Questions?

Thank you!

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Thank You!

From Jim and Dave