

# Meat in the Diet- Science of Meat

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68<sup>TH</sup> RECIPROCAL MEAT CONFERENCE

## High Quality Nutrient Rich Protein

ZINC  
SELENIUM  
Phosphorus  
Riboflavin  
Choline  
High Quality PROTEIN  
B<sub>12</sub>  
IRON  
NIACIN

### GLOBAL TARGETS 2025

To improve maternal, infant and young child nutrition

- 1. 15% REDUCTION IN THE NUMBER OF CHILDREN UNDER-5 WHO ARE STUNTED
- 2. 30% REDUCTION OF ANAEMIA IN WOMEN OF REPRODUCTIVE AGE
- 3. 50% REDUCTION IN LOW BIRTH WEIGHT
- 4. NO INCREASE IN CHILDHOOD OVERWEIGHT
- 5. INCREASE THE RATE OF ENCLAVE OR AREARIES IN THE FIRST 6 MONTHS OF LIFE TO AT LEAST 50%
- 6. REDUCE AND MAINTAIN CHILDHOOD WASTING TO LESS THAN 5%

The body absorbs 2 to 3 times more iron from animal sources than from plants. *Source: Academy of Nutrition and Dietetics*

Evidence suggests that the greater dietary diversity and the consumption of animal source foods are associated with improved linear growth. *Source: WHO*

Poor growth results not only from a deficiency of protein and energy but also from inadequate intake of micronutrients that are vital during rapid growth phases

The addition of animal-source foods to a plant-based diet promotes the recovery of moderately malnourished children. *Source: WHO*

### Meat Consumption is Associated with Less Stunting among Toddlers in Low-income settings

Krebs et al., Food and Nutrition Bulletin, 2011 Sep;32(3):185-91.

### Meat Positively Impacts Test Scores in Kenyan Children

Hulet et al., Br J Nutr 2014 Mar 14;111(5):875-86. Epub 2013 Oct 30.

### Meat as Complementary Food Increases Growth But Not Adiposity in Breastfed Infants

Tang and Krebs, Am J Clin Nutr 2014;100(5):1322-8.

## Meat is a Recommended First Food

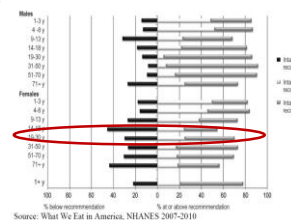


## Meat is Valued for Heme Iron

*"Adolescent and premenopausal females should increase consumption of foods rich in iron."*

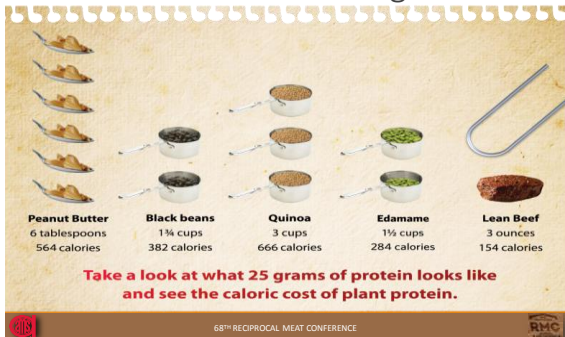
*Heme iron from lean meats is highly bioavailable, hence, an excellent source."*

Figure D1.21 Meat, poultry, eggs: Estimated percent of persons below, at, or above recommendation



Source: What We Eat in America, NHANES 2007-2010

## Meat's High Quality Protein and Calorie Advantage

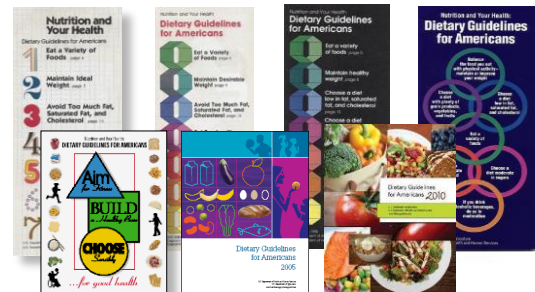


## Is Meat's Place on the Plate Shifting?

## Science Impacts Paradigm Shifts for Beef



## 3+ Decades of Advice to Eat Less





Released Feb 19, 2015

**Scientific Report of the 2015 Dietary Guidelines Advisory Committee**

Advisory Report to the Secretary of Health and Human Services and the Secretary of Agriculture

Dietary patterns associated with positive health outcomes for the U.S. population are: higher in vegetables, fruits, whole grains, low- or non-fat dairy, seafood, legumes, and nuts; moderate in alcohol (among adults); **lower in red and processed meat<sup>1</sup>**; and low in sugar-sweetened foods and drinks and refined grains.

*<sup>1</sup>As lean meats were not consistently defined or handled similarly between studies, they were not identified as a common characteristic across the reviews. However, as demonstrated in the food pattern modeling of the Healthy U.S.-style and Healthy Mediterranean-style patterns, lean meats can be part of a healthy dietary pattern.*

2015-2020: Many Factors Facing Meat



Saturated Fat Skepticism and Debate



Accurate Data on Today's Meat Supply

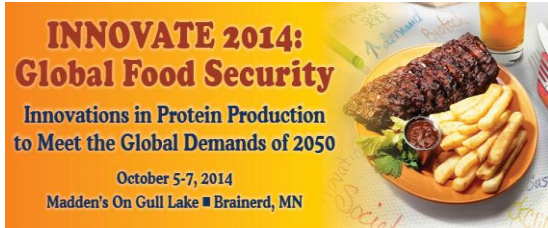
- Today a sirloin steak has 34% less fat than it did in the 1960's
- Since 1980 Dietary Guidelines for Americans were issued, external fat on beef has decreased by 81%
- 38+ cuts that meet USDA Guidelines for Lean



Western Diet Stereotypes Persist

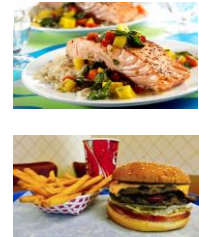
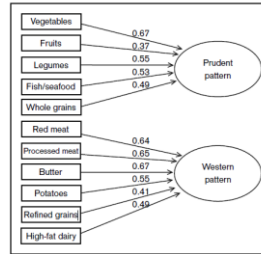


# Note to Self



# Western Pattern is Real...

Figure 1. Factor loadings for selected foods loaded on the two major dietary patterns identified from the food frequency questionnaire in a subsample of the Health Professionals' Follow-up Study (n = 127)



Source: Hu. Current Opinion in Lipidology 2002, 13:349

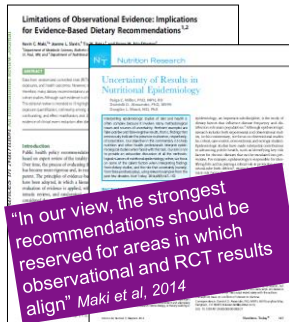
# Building Better Diets with Beef



# Dietary Pattern Research Relies on a Weaker Form of Evidence



# Limitations of Observational Evidence



- Confounding
- Correlated nature of nutrients and dietary components
- Dietary measurement error
- Weak or modest associations (RR < 1.5)
- Displacement/substitution effects
- Healthy or unhealthy consumer bias

# Diet and Cancer

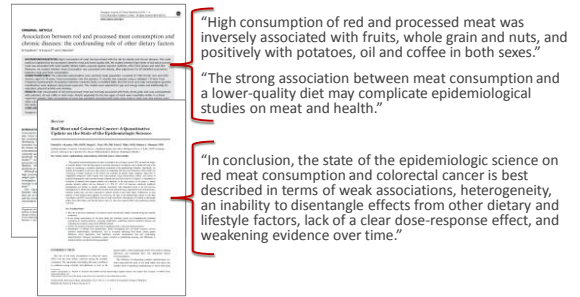


"A substantial amount of data from cohort and case control studies showed a dose response relationship supported by evidence for plausible mechanisms operating in humans. Red meat is a **convincing cause** of colorectal cancer"

## Causal Criteria have Not been Met



## Recent Research Provides Clarity



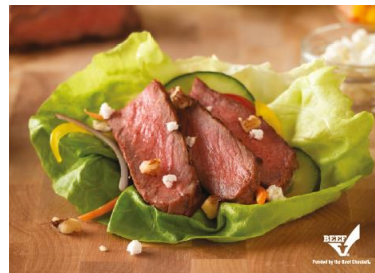
Source: Fogelholm et al 2015 EJCN; Alexander et al 2015 JACN

## 2015 DGAC Top Sources of Calories

Table D1.12. Percent of total energy intake from the 32 as-consumed food subcategories,\* NHANES 2009-10.

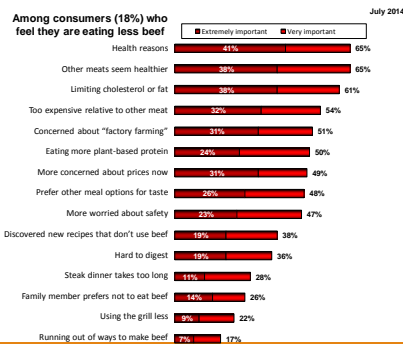
Subcategory	% of total energy consumption	Cumulative %
BURGERS, SANDWICHES, and TACOS	13.8	13.8
DESSERTS and SWEET SNACKS	8.5	22.3
SUGAR-SWEETENED and DIET BEVERAGES	6.5	28.8
RICE, PASTA, GRAIN-BASED MIXED DISHES	5.5	34.3
CHIPS, CRACKERS, and SAVORY SNACKS	4.6	38.9
PIZZA	4.3	43.2
MEAT, POULTRY, SEAFOOD MIXED DISHES	3.9	47.1
VEGETABLES (Incl. Beans and Peas, not Starchy)	3.8	50.9
ALCOHOLIC BEVERAGES	3.8	54.8
STARCHY VEGETABLES	3.8	58.6
YEAST BREADS AND TORTILLAS	3.8	62.4
HIGHER FAT MILK/YOGURT	3.5	65.8
BREAKFAST CEREALS AND BARS	3.5	69.3
POULTRY (Not incl. Deli and Mixed Dishes)	3.3	72.6

## Red Meat and Heart Health



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## Cholesterol Concerns Top Limiter



Base: Those eating less beef (N = 186)  
 39% Are you noted earlier that you plan to eat less beef, how important or what impact does each of the following have on your decision to eat less beef?

## Accurate Data on Today's Meat Supply

- Today a sirloin steak has 34% less fat than it did in the 1960's
- Since 1980 Dietary Guidelines for Americans were issued, external fat on beef has decreased by 81%
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Domestic Consumer Preference

Role of beef in a Mediterranean dietary pattern on heart health and wellness

Research AR



Penny M. Kris-Etherton, PhD, RD  
Distinguished Professor of Nutrition



PURDUE UNIVERSITY

Wayne W. Campbell, PhD  
Professor of Nutrition Science



David J. Baer, PhD  
Supervisory Research Physiologist



Meat's Role in Vitality, Stamina and Satisfaction

Rethinking Protein's Role in Health

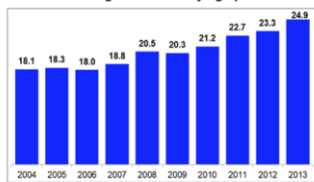


Protein Summit 2.0: Science Continues to Grow



Consumer Interest in Protein has Skyrocketed

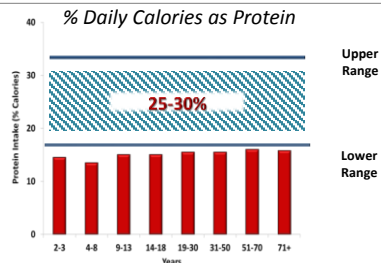
"What do you usually look for on the Nutrition Facts Panel?"  
Percentage of adults saying "protein"



Source: The NPD Group/Dieting Monitor (2013)

- 91% of Americans think that it is important to get enough protein in their diets (IFIC, 2014)
- 57% of Americans consider how much protein is in a food or beverage before purchase (IFIC, 2014)

Flexibility to Increase Protein Intake



## Reduced Evening Snacking When Beef is Consumed at Breakfast

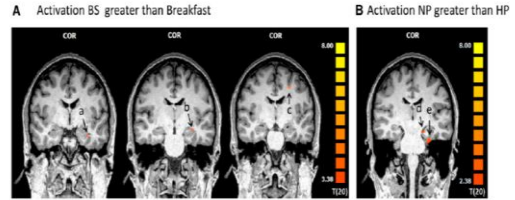


Overweight late adolescent breakfast skipping girls significantly reduced unhealthy evening snacking following a protein-rich breakfast

Source: Leidy, et al., AJCN, 2013

## Protein's Role in Reward Driven Eating

LEIDY ET AL



Brain regions displaying differential activation prior to dinner in response to food vs nonfood stimuli

Source: Leidy, et al., AJCN, 2013

## Lean Red Meat Supports Strength in Elderly Women (age 60-90) Living in Retirement Villages

**Lean Red Meat + Resistance Exercise**  
(5% ounces LRM + 2 d/wk resistance exercise)

- ✓ Muscle Strength increased
- ✓ Insulin-like Growth factor increased
- ✓ Reduction in Pro-Inflammatory Markers
- ✓ No differences in blood lipids or blood pressure.

Protein-enriched diet, with the use of lean red meat, combined with progressive resistance training enhances lean tissue mass and muscle strength and reduces circulating L-6 concentrations in elderly women: a cluster randomized controlled trial<sup>1,2</sup>

**Background:** Physical inactivity, inadequate dietary protein, and low muscle mass (sarcopenia) contribute to age-related muscle loss, reduced function, and disability. **Objective:** To assess the effect of protein-enriched diet and progressive resistance training (PRT) combined with progressive resistance training (PRT) on lean tissue mass and muscle strength in elderly women. **Design:** A cluster randomized controlled trial. **Setting:** Retirement villages. **Participants:** 100 elderly women (mean age 75.5 years) living in retirement villages. **Intervention:** The intervention group received a protein-enriched diet (5% ounces LRM + 2 d/wk PRT) and PRT. **Main Results:** The intervention group had significantly greater increases in lean tissue mass and muscle strength compared to the control group. **Conclusions:** A protein-enriched diet combined with PRT improves lean tissue mass and muscle strength in elderly women.

Source: Daly, et al., AJCN, 99 (4)2014

## DASH-type Diet with Lean Red Meat Improves Mood

Mean difference in the change in mood (week 14 versus baseline) in the vitality diet and healthy diet groups<sup>a</sup>

	Vitality diet	Healthy diet
Total number	36	39
Profile of Mood States		
Anger	-0.7 ± 0.5 <sup>b</sup>	-1.7 ± 0.4 <sup>b</sup>
Confusion	-1.3 ± 0.4 <sup>b</sup>	-0.7 ± 0.2 <sup>b</sup>
Depression	-1.1 ± 0.3 <sup>b</sup>	-0.6 ± 0.4 <sup>b</sup>
Fatigue	-2.0 ± 0.7 <sup>b</sup>	-1.3 ± 0.4 <sup>b</sup>
Tension	-1.9 ± 0.5 <sup>b</sup>	-2.0 ± 0.5 <sup>b</sup>
Vigor	-0.5 ± 0.6 <sup>b</sup>	-0.2 ± 0.6 <sup>b</sup>
Global score	-6.4 ± 2.8 <sup>b</sup>	-5.9 ± 1.6 <sup>b</sup>

<sup>a</sup> Values are presented as mean ± SEM.  
<sup>b</sup> Denotes a significant (P < 0.01) time effect, one-way between-groups multivariate analysis of variance.

**CONCLUSION:** A moderate sodium DASH-type diet, rich in fruits and vegetables, which included lean red meat on most days, appeared to improve mood to a greater extent than the HD, particularly in relation to anger. In addition, an increase in lean red meat and fruit was related to an improvement in depression and confusion, respectively.

Source: S. J. Torres, C.A. Nowson / Nutrition 28 (2012) 896-900

## Feeling Better with Beef

"Beef gives me the strength and energy to do more."

"Beef fuels my journey for good health."

"I have a really full schedule and I keep moving so I need the right food to give me the energy to make it through the day every day."

- Nate L. 24



"Beef is a food that I feel gives me physical energy when I need a boost throughout the day and it also gives me that mental boost and when I'm mentally alert and happy I feel like I'm always looking to do more."

- Katie B. 30

## Millennials Crave Balance

While health is important to Millennials and something they think about, **they do not want to obsess about being healthy.** Millennials would prefer to seamlessly integrate healthy decisions into their lives.

**Balance and moderation** are important components to staying healthy - both in terms of balancing their food choices, as well as finding the **happy balance of nutrition and taste** in their food.



"My definition of health is a really good balance of moving my body so that I don't feel stuck, and eating things that let me move my body in the ways that I want to. And also emotional balance - just feeling really emotionally level and calm and good."

- Ariel B. 28



# Tides Turn



1984



1999



2014



## Questions?

For further information, please contact Shalene McNeill, PhD, RD, Executive Director, Human Nutrition Research at the National Cattlemen's Beef Association, a contractor to the Beef Checkoff Program. Every beef farmer and rancher and every beef importer contributes to a fund called the beef checkoff, which is used to support the Human Nutrition Research program

# Thanks to our Sponsor

