Delivering High Quality Meat Proteins to the Changing Diet of a Growing Population

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AMSA New HQ: Huntington Towers

- 12 stories high
- 1989 article in “The Scientist”, “a strange, round, pink building”
- 12 sides, as if it were “a giant Easter Island sculpture of an early Cray supercomputer”
AMSA New HQ: Huntington Towers

- “Walking the circular hallway inside feels like being on the Starship Enterprise”
AMSA New HQ: Huntington Towers

- Only one tower, why the “s”?
Significant populations around the world are challenged each day to consume a healthy, nutritious and balanced diet.
Populations Challenged to Consume a Healthy, Balanced Diet

Underfed: Calorie poor, Nutrient poor

Top sources of calories in Kenya: cereals, roots & tubers

Common deficiencies:
- **Marasmus** (inadequate protein and calories)
- **Kwashiorkor** (inadequate protein/ sufficient calories)

**Micronutrients**: iron, zinc, calcium, B-vitamins, vitamin A and vitamin E

Animal source foods are the most bioavailable source of these nutrients
Under Nourished: Calorie rich, nutrient poor

Top sources of calories in Guatemala
Table sugar, vegetable oil, margarine, corn tortilla, white bread

Common deficiencies in iron, zinc, vitamin D and vitamin B₁₂

Deficiencies lead to
Stunting
Delayed physical developmental
Cognitive impairment
Nursing Home Patients in the US

Protein & Energy Malnutrition:

Government estimates as many as 50% of elderly people in nursing homes in the United States do not get enough protein in their diet.

Houston, we have a problem…

Apollo 13 mission to the moon: April 11, 1970

2 days later….

Tom Hanks as Capt. James Lovell

Actual quote:  “Houston, looks like we've got a problem here.”
Populations Challenged to Consume a Healthy, Balanced Diet

Malnourished: Calorie rich, nutrient rich

Obesity Crisis in the U.S.

Food Deserts
Energy Imbalance Creates New Dietary Challenges
The consumption of meat plays an important role in achieving a healthy, balanced diet.
## Nutritional benefits of meat

<table>
<thead>
<tr>
<th>Meat / Protein (3 oz.)</th>
<th>Calories</th>
<th>Fat (g)</th>
<th>Carbs (g)</th>
<th>Protein (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pot Roast</td>
<td>105</td>
<td>3.1</td>
<td>0.0</td>
<td>18.1</td>
</tr>
<tr>
<td>Chicken Breast (no skin)</td>
<td>110</td>
<td>1.2</td>
<td>0.0</td>
<td>23.1</td>
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<tr>
<td>Lamb Chops</td>
<td>112</td>
<td>4.2</td>
<td>0.0</td>
<td>17.4</td>
</tr>
<tr>
<td>Turkey Breast (w/skin)</td>
<td>126</td>
<td>3.5</td>
<td>0.0</td>
<td>22.2</td>
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<tr>
<td>Beef Liver</td>
<td>137</td>
<td>4.2</td>
<td>2.9</td>
<td>20.7</td>
</tr>
<tr>
<td>Hot Dog (1 small, no bun)</td>
<td>142</td>
<td>12.8</td>
<td>0.8</td>
<td>5.4</td>
</tr>
<tr>
<td>Veal</td>
<td>149</td>
<td>5.9</td>
<td>0.0</td>
<td>22.4</td>
</tr>
<tr>
<td>Buffalo Wings * (3)</td>
<td>152</td>
<td>9.0</td>
<td>1.5</td>
<td>16.4</td>
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<tr>
<td>Ham</td>
<td>155</td>
<td>9.0</td>
<td>2.6</td>
<td>14.9</td>
</tr>
<tr>
<td>Pork Chops</td>
<td>169</td>
<td>7.7</td>
<td>0.0</td>
<td>23.4</td>
</tr>
<tr>
<td>Sirloin Steak</td>
<td>172</td>
<td>6.8</td>
<td>0.0</td>
<td>25.8</td>
</tr>
<tr>
<td>Chicken Breast (w/ skin)</td>
<td>172</td>
<td>9.3</td>
<td>0.0</td>
<td>20.9</td>
</tr>
<tr>
<td>Bacon (5 slices)</td>
<td>182</td>
<td>15.6</td>
<td>0.2</td>
<td>9.6</td>
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<tr>
<td>Tenderloin</td>
<td>227</td>
<td>17.9</td>
<td>0.0</td>
<td>15.3</td>
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<tr>
<td>Ground Turkey</td>
<td>235</td>
<td>13.2</td>
<td>0.0</td>
<td>27.4</td>
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<tr>
<td>Bratwurst</td>
<td>256</td>
<td>22.0</td>
<td>1.8</td>
<td>12.0</td>
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<tr>
<td>Ground Beef</td>
<td>264</td>
<td>22.6</td>
<td>0.0</td>
<td>14.1</td>
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<tr>
<td>Bologna</td>
<td>266</td>
<td>24.3</td>
<td>0.7</td>
<td>10.2</td>
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<tr>
<td>Babyback Ribs</td>
<td>315</td>
<td>25.1</td>
<td>0.0</td>
<td>20.6</td>
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<tr>
<td>Italian Sausage</td>
<td>346</td>
<td>31.3</td>
<td>0.7</td>
<td>14.3</td>
</tr>
</tbody>
</table>

### Micro-nutrient rich:
- $B_6$
- $B_{12}$
- Niacin
- Thiamin
- Riboflavin
- Iron
- Magnesium
- Potassium
- Zinc
- Phosphorous
Dr. Wayne Callaway, obesity specialist, George Washington Univ.

Skipping breakfast triggers overeating later in the day. People who skip breakfast, have a 5% lower metabolism than those who eat a breakfast.
What Happened?

Somewhere in our past, we changed from Hunters…

to Gatherers

Eventually leading to urbanization
“Overall, the agricultural villagers were clearly less healthy than the hunters”
Progression From Natural to Preserved

Natural & Organic
- Fresh
- Grass Fed
- Free Range
- Grain Fed
- Corn Fed
- Naturally Raised
- Natural Choice

Prepared
- Cleaned
- Tenderized
- Marinades
- Roasted
- Baked
- Fried

Processed
- Refrigerated
- Frozen
- Ham
- Bacon
- Hot dogs
- Bologna
- SPAM®

Preserved
- Canned
- Dried
- Salted
- Cured
- Fermented
- Pickled
72% of consumers know ‘nothing or very little’ about farming or ranching*


2007: average age of principle farm operator in the United States
Why Prepare, Process or Preserve? (PPP)
Techniques to Preserve Meat
California wants to define a Processed Food as…

…any food other than a raw agricultural commodity and includes any food produced from a raw agricultural commodity that has been subject to processing such as:

- canning
- freezing
- smoking
- dehydration
- pressing
- fermentation
- cooking
- milling
California Cooks?

Exemption$

- Animals w/o GE traits
- W/o knowing
- GE processing aids
- Any alcoholic beverage
- Organic
- Restaurant foods
- Medical foods

Orange juice
Shelled nuts
Olive oil
Frozen food

Raisins
Canned salmon
Milled wheat
Sliced apples
So What Are You Going to Do About This?

- Protein deficiencies in developing nations
- Protein deficiencies in nursing homes
- Number of farmers decreasing & aging
- Next generations do not know how to cook
- World-wide nutritional imbalance

Under fed & under nourished

Over fed & over nourished
Population growth
- 7 billion in 2012
- 9.5 billion by 2050
- Growth in developing nations

Processed foods are necessary
- Transportation
- Shelf-stable storage
- Availability year-round
- Variety
- Food safety
- Extended shelf-life
Consumers spend very little time preparing food

Yet they want fresh & natural options…

Question For The Day…

How will food engineering, technology, science and safety enable us to continue to improve our methods for food preparation, processing and preservation, especially when it comes to delivering meat proteins to consumers around the world?
1862 Abraham Lincoln founded the United States Department of Agriculture

1895 Commercial pasteurization machines introduced

1906 Federal Meat Inspection Act
Required inspection and sanitary facilities

1917 Most major cities require milk to be pasteurized

1917 Milk-borne illness 25% of all food-borne illnesses

1938 300-400 cases of trichinellosis/year

1940s 300-400 cases of trichinellosis/year

1957 Poultry Products Inspection Act

1962 Incidence of milk-borne illness <1%

1993 Jack in the Box outbreak lead to establishment of PulseNet

1996 Pathogen Reduction/HAACP Systems

1996 <40 cases of trichinellosis/year
Advantages over thermal processing:

- Improves food safety
- Improved food quality parameters

Applicable across several products:

- Orange juice
- Seafood
- Sliced meats
- Salsa
- Guacamole
- Smoothies

Other Techniques and Technologies?

- Irradiation
- Microwave
- Ohmic
- Reduced sodium
- Trans fats
- Food form
- Calorie-density
- Nutrient-density-quality
A New Challenge

How do we communicate the benefits of processed meats to a global society?
Tell your story **first** and **often**

**Social Media Networks**

- Blogger
- Myspace
- Twitter
- Flickr
- LinkedIn
- YouTube
- Digg
- FoodNet
- Pulse Net USA
- CDC
- Google

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Communicating with a 21st Century Audience

IN THE KNOW vs. IN THE NOW
“The best way to have a role in society is to understand how people are talking about things in real time.”

Jean-Philippe Maheu, Chief Digital Officer, Ogilvy
Keep it Real

“We can do it right and show it”
Dr. Temple Grandin

“people don’t like surprises”
THE END