President Gogue
Auburn University

Paula Alexander
Tyson Foods, Inc.

Undergraduate Scholastic Achievement Award Selection Committee
• Paula Alexander - Chair
• Kirk Braden
• Christy Bratcher
• Kerri Harris
• Brad Morgan
• Ashley Ray Sutterfield

Thanks to Our Sponsor

Russ Egbert
ADM

Undergraduate Scholastic Achievement Award Winners
Tanner Adams, Texas Tech University
Ethan Blom, South Dakota State
Ashley Collins, Oklahoma State University
Sydney Corkran, Auburn University
Bailey Harch, The Ohio State University
Bo Hutto, Texas Tech University
Eric Miller, University of Nebraska
Andrea Garmyn

Texas Tech University

Graduate Student Research Poster Competition Committee

- Andrea Garmyn - Chair
- Dustin Boler
- Amilton de Mello
- Jerrad Legako
- Terry Rolan
- Jin-Shan Shie

Thanks to Our Sponsor

Susan Shivas

Tyson Foods, Inc.

Graduate Student Research Poster Competition, M.S.

Winners

1st - Michael James Colle, University of Idaho
2nd - Johnathan Broady, Auburn University
3rd - Alexandra Christiansen, Kansas State University
Graduate Student Research Poster Competition, Ph.D.
Rebecca Acheson, Colorado State University
Bruno Costa Lima, Universidade Federal Fluminense
Ayca Gedikoglu, University of Missouri
Adria Grayson, Texas A&M University
Scott Howard, Colorado State University
Amanda King, University of Wisconsin - Madison
Ashley Lepper-Billie, North Dakota State University
Bradley Lowe, University of Illinois
Jennifer Martin, Texas Tech University
Amanda McKeith, Pennsylvania State University
Dustin Mohrhauser, South Dakota State University
Anna Taylor, South Dakota State University
Kimberly Varnold, University of Nebraska - Lincoln

Graduate Student Research Poster Competition, Ph.D.
Winners
1st - Anna Taylor, South Dakota State University
2nd - Amanda King, University of Wisconsin - Madison
3rd - Bradley Lowe, University of Illinois

Ken McMillin
Foundation Trustee Chair

Thanks to Our Sponsors
Funded by the Beef Checkoff.

Thanks to Our Sponsors
Smithfield
John Scanga
Elanco Animal Health

Making Safe, Affordable and Abundant Food a Global Reality
William Weldon Ph.D., Vice President, Global Research and Development and Western Europe Operations, Elanco Animal Health

Enriching People’s Lives
William (Bill) Weldon, PhD and Susan Finn, PhD, RD, FADA

“Almost certainly, the first essential component of social justice is adequate food for all mankind.”
– Norman Borlaug
1970 Nobel Peace Prize winner

Hunger is the #1 global health risk
– 870 million people chronically undernourished in 2010-2012

Significant economic cost
– 2-3% of a country’s national income is lost to malnutrition


Animal source foods fill a need
- High-quality protein
- Key micronutrients

What is Food Security?

Availability
Access
Utilization

Three Essentials

- Broadening the understanding of nutritional needs and role of animal source foods in the diet
- Advancing innovation that supports sustainable production of animal source foods
- Empowering collaboration that ensures choice, which increases access to and affordability of animal source foods

Growing Population

Vision

Achieving food security demands a global vision to ensure that everyone has access to animal source foods and the nutrition needed to strengthen themselves and their societies.

World Health Organization

FAO


Three Essentials

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Growing Population

FAO


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Growing Population

FAO

People experiencing hidden hunger to the affluent needing to maintain proper weight. Animal source foods lessen chronic disease risk and obesity.

Nutrition Status Across the Spectrum

People living on $3 - $10 and moving into middle class. Animal source foods help diversify diets. People living on less than $2 a day and malnourished. Animal source foods improve brain, muscle and skeletal development.

Developed Countries
Emerging Countries
Developing Countries

US
Europe
Africa
China


Often equated with amount of available calories, food security is in fact not only an issue of quantity, but also one of quality – in the form of nutrient density.

Dr. Ricardo Uauy, MD, PhD, Professor, Nutrition & Pediatrics, University of Chile

The Need for a Balanced Diet

• Lack of calories and essential nutrients hinders mental and physical development.
• When people are weak, they never reach full productivity.
• Societies fall short of their full potential.

The Need for a Balanced Diet


Beef Adds Key Nutrients

Rice, white, long-grain - regular-cooked (100g) Source: USDA SR-21.

Beef, composite of trimmed retail ruts, cooked Beef (1 serving) Protein Vitamin B12 Zinc Iron

% Daily Value (DV)

Protein & Key Micronutrients

Join the conversation @Elanco

Chicken Adds Key Nutrients

Chicken, broilers or fryers, meat and skin, cooked, roasted Chicken (1 serving) Protein Vitamin A Vitamin B12 Zinc Iron

% Daily Value (DV)

Protein & Key Micronutrients

Join the conversation @Elanco

Balancing the Diet

• In cereal based diets, even a small amount of protein (100 grams) can make a significant difference in the ability of a person to get enough vitamin B12 and Zinc.
The Importance of Protein

- Composed of amino acids, which the human body needs to perform critical functions
  - Muscle
  - Bones
  - Blood
  - Immune system

Addressing Obesity

- High-quality dietary protein contributes to weight loss and maintenance
  - Metabolic rate
  - Satiety
  - Body composition

The Significance of an Egg

Addressing Malnutrition

- Calories alone do not ensure good health
- 1 out of 3 people in developing countries are deficient in micronutrients
  - Iron, zinc, calcium, vitamins A, D and B12

Importance of Animal Source Foods: Micronutrients

- Iron deficiency is the most prevalent form of malnutrition, affecting 2 billion people
- WHO estimates that eradicating iron deficiency could improve national productivity levels by 20 percent
- Iron deficiency anemia in 6-24 month-old infants are at risk for poorer cognitive, motor and social development. Babies whose mothers receive enough iron during pregnancy, are born with iron stores.
Kenya Nutrition Study

- Randomized, controlled feeding intervention study of 1st and 2nd grade children.
  - Tested meat, milk, energy and control
  - Observed diets rich in iron, zinc, vitamin B12 and riboflavin

"Meat supplementation improves growth, cognitive, and behavioral outcomes in Kenyan children."


UN Standing Committee on Nutrition, 2009.

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Change in Total Test Scores by Group (over 5 school terms)

Feeding Group

- Meat
- Milk
- Energy
- Control

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Change in Arm Muscle Area (cm²)

Predicted Lean Body Mass

Control
Milk
Meat

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Sufficient amounts of nutrient-rich foods must be available to meet future needs

Economic Implications

- Investment in human capital, leadership initiative, and economic development
- Nutrition is critical for a productive work force
- Challenge is how to put affordable meat on the table for the family

Economic Implications

- Globally, the annual direct cost of child malnutrition is estimated to be between $20 billion to $30 billion.
  - In Zimbabwe, malnutrition reduced lifetime individual earnings by an estimated 12% due to its impact on educational achievement.
  - Iron deficiency anemia caused an estimated 17% loss in heavy manual labor productivity.

Sufficient amounts of nutrient-rich foods must be available to meet future needs.

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Combating malnutrition is the best investment to make in the long-term viability of a developing country.

– 2008 Copenhagen Consensus

Access to animal source foods is important for physical, mental and economic development. But, providing enough meat, milk and eggs is a growing challenge.

By 2050, we’re expected to have more than 9 billion people on the planet.

Three Essentials

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Food, Choice, Sustainability

In the year 2050, world population will require 70% more food and 70% of this food must come from efficiency-improving technology.

The Benefits of Technology

in 60 Years = 250% Output from Same Input

Innovation – with balance

Sustainable Systems

Economically Viable

ScientificallyVerified

Ethically Grounded

Source: Center for Food Integrity “Sustainable Balance” model

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The Need For Innovation:
Trends in Global Egg Production

Eggs/Hen/Yr

No. Hens (bill)

12.6B Hens


155 eggs per hen

+1 ¾ egg/hen/year

- 8 egg/hen/year

Resource Impact

• Innovation → 3.9B Fewer Hens to Meet Demand

<table>
<thead>
<tr>
<th>Resource</th>
<th>Savings</th>
<th>Percent Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed</td>
<td>117 million tons</td>
<td>26%</td>
</tr>
<tr>
<td>Land</td>
<td>67.5 million acres</td>
<td>26%</td>
</tr>
<tr>
<td>Water*</td>
<td>76.6 bill gallons</td>
<td>31%</td>
</tr>
</tbody>
</table>

Note: Accounts for bird water consumption only. Does not account for additional savings from crop irrigation and sanitation.

Protein for a Child

One egg a day equals half protein needs and all iron needs of a child

Three Essentials

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Empowering Collaboration

• Governments: Establish global standards allowing movement of meat, dairy and eggs from areas of production to population centers
• Agriculture: Identifying production systems that enhance animal welfare and improve productivity
• Food chain: Allow for product choice, while enhancing confidence, quality, and wholesomeness of food
• Nutrition/science community: Provide accurate and clear information

Source: @Elanco
Choice, a Consumer’s Rights
The International Consumer Attitudes Study (ICAS)

ICAS: Lifestyle Buyer
The International Consumer Attitudes Study (ICAS)

Vision

Solvable Problems

How will you help tell the story?
Concurrent Technical Sessions

Concurrent Technical Session I
Advancement in Meat Quality - Ballroom A

Concurrent Technical Session II
Food Safety - Auditorium