The Food for Health Initiative: What is Innovation?
Dr. Stanford Blade, CEO
Innovation- “good ideas brought to market” (R. Yada)

• The basis for developing a good, new idea:
  – Responding to a need
  – Anticipating an opportunity
Industry drivers

• Need to be profitable
• Next generation economy opportunities
• Sustainable practices
• Greenhouse gas emissions
• Ecosystem adaptation to climate change
• Rural development
• Enhanced agricultural and forestry productivity
• Demographics/Industry structure
• The need for innovation
Increased food prices are in the news....

“Food prices are soaring to record levels, threatening many developing countries with mass hunger and political instability”....Feb 24, 2011 N.Y. Times
Prices of many commodities rose even more than food in 2008, but not true in 2011 so far…

Index: 2005 = 100

Source: International Monetary Fund: International Financial Statistics
The Updated Food Dollar

Farm Share: Farmers’ receipts from sale of raw food commodities

Marketing Share: Post-farm receipts to food supply chain industries

Farm Share, 15.8%

Marketing Share, 84.2%

The Updated Food Dollar

- Food Processing, 18.60%
- Farm and Agribusiness, 11.6%
- Food Services, 33.7%
- Retail Trade, 13.6%
- Energy and Transportation, 10.3%
- Packaging, 4.0%
- Advertising, Legal, Accounting, 3.8%
- Finance and Insurance, 4.4%

FAFH Farm Share Declines

Farm Share: total, at-home, and away-from-home

Source: A Revised and Expanded Food Dollar Series (2011), ERR114, Economic Research Service,
www.ers.usda.gov/data/FoodDollar/
“Eating and physical activity patterns that are focused on consuming fewer calories, making informed food choices, and being physically active can help people attain and maintain a healthy weight, reduce their risk of chronic disease and promote overall health”.
State of Industry

• In 2009, agriculture in Alberta created $8.5 billion of value for farmers

• Food and beverage manufacturing reached $12 billion in 2009

• In 2009, Alberta’s revenue from forest industries was $2.4 billion (2007: $5.4B)
# Alberta Farm Gate Value (2009)

<table>
<thead>
<tr>
<th>Product</th>
<th>Value ($mil)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef</td>
<td>2,968</td>
</tr>
<tr>
<td>Canola</td>
<td>1,855</td>
</tr>
<tr>
<td>Wheat</td>
<td>1,775</td>
</tr>
<tr>
<td>Hogs</td>
<td>397</td>
</tr>
<tr>
<td>Dairy</td>
<td>459</td>
</tr>
<tr>
<td>Poultry</td>
<td>260</td>
</tr>
<tr>
<td>Pulses</td>
<td>147</td>
</tr>
<tr>
<td>Barley</td>
<td>331</td>
</tr>
<tr>
<td>Potatoes</td>
<td>154</td>
</tr>
<tr>
<td>Vegetables</td>
<td>85</td>
</tr>
</tbody>
</table>

*Processing - $11.7B*
# Alberta Food and Beverage Mfg (2009) - $C billion

<table>
<thead>
<tr>
<th>Product</th>
<th>Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total sales</td>
<td>11.993</td>
</tr>
<tr>
<td>Meat products</td>
<td>6.934</td>
</tr>
<tr>
<td>Grain and oilseed milling</td>
<td>1.342</td>
</tr>
<tr>
<td>Snack foods</td>
<td>0.492</td>
</tr>
<tr>
<td>Dairy products</td>
<td>1.018</td>
</tr>
<tr>
<td>Beverages</td>
<td>0.859</td>
</tr>
</tbody>
</table>
Alberta’s Top 5 Export Markets (2009)

<table>
<thead>
<tr>
<th>Country</th>
<th>AB Market Share</th>
<th>Value ($Cmillions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. United States</td>
<td>35.9%</td>
<td>3,213</td>
</tr>
<tr>
<td>2. China</td>
<td>13.8%</td>
<td>1,048</td>
</tr>
<tr>
<td>3. Japan</td>
<td>12.6%</td>
<td>954</td>
</tr>
<tr>
<td>4. Mexico</td>
<td>6.0%</td>
<td>455</td>
</tr>
<tr>
<td>5. Saudi Arabia</td>
<td>2.3%</td>
<td>171</td>
</tr>
</tbody>
</table>
Making the Food-Health Connection

• “It’s time to ask: how can food and health address a growing number of public health concerns and chronic disease?”

• “What changes must Alberta families make-along with governments, industry and healthcare industries-to have a healthier future, and at the same time, offer economic development opportunities?”
Food & Health Over-Simplified

GROW

PROCESS

Distribute

Market

Purchase

Eat

Health Benefit

Health System Benefit

Innovation Required

Economic Benefit
Opportunity Areas

• **Quality Food for Health**
  – Products and Processes for Improved Wellbeing
  – Food Safety
Investing in new ideas…

• Increasing the seed oil quality and content of canola….(Dr. Randy Weselake, U of A)
Investing in new ideas…

- Using new technologies to develop delicious meat products… (Meat quality: Dr. Heather Bruce; Livestock Genomics: Dr. Steve Moore, U of A)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>R² value (R² = 1 is perfect)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Andrés et al. 2008 (raw beef steak)</td>
</tr>
<tr>
<td>pH₂₄ hours</td>
<td>0.97</td>
</tr>
<tr>
<td>L* 60 min</td>
<td>0.82</td>
</tr>
<tr>
<td>Tenderness</td>
<td>NA</td>
</tr>
<tr>
<td>Juiciness</td>
<td>NA</td>
</tr>
<tr>
<td>Contraction</td>
<td>0.16</td>
</tr>
<tr>
<td>Water loss</td>
<td>0.20</td>
</tr>
<tr>
<td>Toughness</td>
<td>0.65</td>
</tr>
</tbody>
</table>
Investing in new ideas….

- Using pulse crops and ingredients as a source of fiber and resistance starch on satiety hormone production…
  (Dr. Raylene Reimer, U of Calgary)
Investing in new ideas…..

- Using plant proteins to produce nanopackages which can deliver bioactive compounds….. (Dr. Lingyun Chen, U of Alberta)

Nano-encapsulations liberated from barley protein microparticles for oral delivery of bioactive compounds

Ruoxi Wang, Zhigang Tian, and Lingyun Chen.

a Dept. of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, Canada T6G 2P5
Investing in new ideas….

- Decreasing the sodium content of meat products while maintaining food safety…
  (Dr. Lynn McMullen, U of Alberta)
Investing in new ideas….

- Finding additional value in co-products, such as functional compounds recovered from potato peels…. (Dr. Marleny Saldana, U of Alberta)
Alberta Innovates
(www.albertainnovates.ca)
Government of Alberta

Government of Alberta

Advanced Education & Technology Research and Innovation Connector

Government of Alberta Ministries

ARIA
Alberta Research & Innovation Authority

Research & Innovation Organizations

Alberta Innovates: Energy & Environment Solutions
Alberta Innovates: Health Solutions
Alberta Innovates: Bio Solutions

Post Secondary Institutions and Other Research Performers

‘Capturing Value’ from Industry for Society

Advice from Industry and Society

Commercialization Service Providers

Alberta Enterprise Corporation
Innovative Companies

- **Sakai Spice**
- **kinnikinnick Foods**
- **Sunterra Meats**
- **Cheemo**
- **ALERTA Food Processors Association**

Dedicated to growing, processing and marketing quality food products—from our carefully managed farming operations to our unique processors to our enthusiastic and innovative retail team.
Bio Solutions Corporation - Proposed Priorities

Value Chain Sustainability
• Market Driven Traits and Products
• Agriculture and Forest Sustainability

Advancing the Bioeconomy
• New Conversion Processes
• New Products

Quality Food for Health
• Products and Processes for Improved Wellbeing
• Food Safety

Industry Challenges and Emerging Opportunities
• Science-based Solutions for Immediate Industry Challenges
• Integrated Business Models

Prion and Protein Misfolding Diseases
• Advancing Science and its Application
• Connections between Prion and Other Protein Misfolding Diseases
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Website: www.albertainnovates.ca/bio
Twitter: BioSolutionsCEO