



The Food Processing Center – UNL

Laboratory Services and Applied Research and Engineering (ARE) Unit

Jayne Stratton, Ph.D
Andreia Bianchini, Ph.D.

The UNL Food Processing Center's Laboratory Services

Mission Statement:

To ensure accurate and timely laboratory services and to continuously meet or exceed the stated or implied expectations of our clients through day-to-day interactions.

Laboratory Services – History

The FPC Laboratory began microbiological analysis for food companies in ~1989; Moved to new lab in 1990. Staff consisted of 1 manager. Dr. Stratton began working for FPC in 2002.

In 2005, the original lab manager retired after 25 years of service at UNL and Dr. Stratton became the new manager.

In 2006, Dr. Rolando Flores became Director of The FPC.

In 2010, Dr. Bianchini joined the FPC and the Microbiology Laboratory.

Laboratory Services Offered

1. Microbiological testing of food (1989)
 - Pathogens (*Listeria*, *Salmonella*, *E. coli* O157:H7)
BAX[®] PCR System
Roche Lightcycler[®] Real-Time PCR
Premitest[®] *Salmonella* serotyping system (new in 2008)
 - General microbiology (TPC, coliforms, shelf-life, etc)
Eddy Jet Spiral Plater and Flash & Go Autocounter
2. Acidified Foods Program (2004)
 - Testing
 - Process review
3. Mycotoxin analysis (2007)
Dionex Ultimate 3000 HPLC System



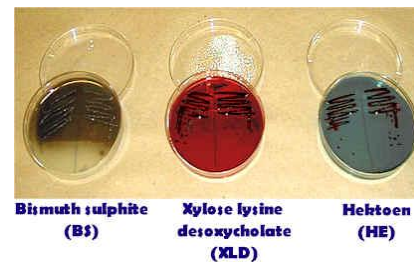
Capabilities - Pathogens

- Qualicon BAX®
PCR system
- Roche Lightcycler®
real-time PCR system



Capabilities - Pathogens

- Lateral flow ELISA (Neogen, SDI, etc)
- Biochemical ID panels
- Traditional Culture methods (FSIS, BAM)



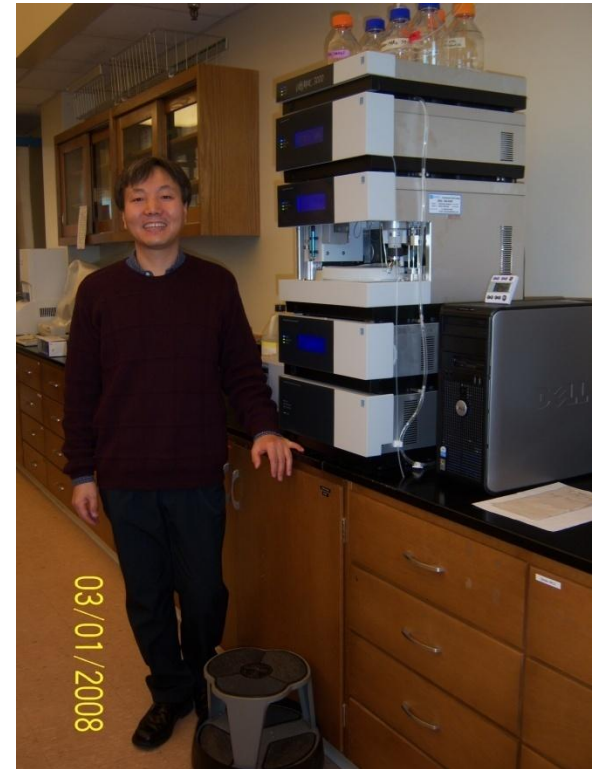
Capabilities – Molds and Mycotoxins

- **Mold Culture & Identification**
 - Total Mold and Yeast Counts
 - Morphological Identification of Molds
 - Mold -Culture collection and storage
- **ELISA**
 - DON, Fumonisin, Aflatoxin, Zearalenone, Ochratoxin, T-2



Capabilities - Mycotoxins

- Dionex UltiMate 3000
HPLC system with:
PDA detector (UV/VIS)
Fluorescence detector
Thermostatted autosampler
Chromeleon® software



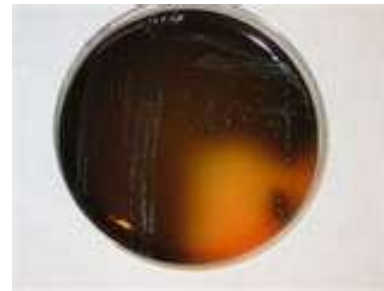
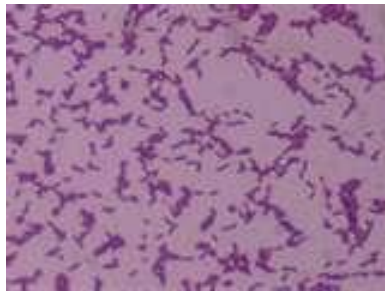
Dr. Soo-Hyun Chung

Laboratory Operation

- Smaller number of samples
- Fast turn-around time
- Individualized service, customer-oriented
- Expert interpretations
- Research projects

Sample Profiles

- The laboratory tests food samples for food companies both in Nebraska and nation-wide.
- ~50% of our samples annually are for pathogen testing
- ~60% of the pathogen testing is for *Listeria*



Typical Client Profiles

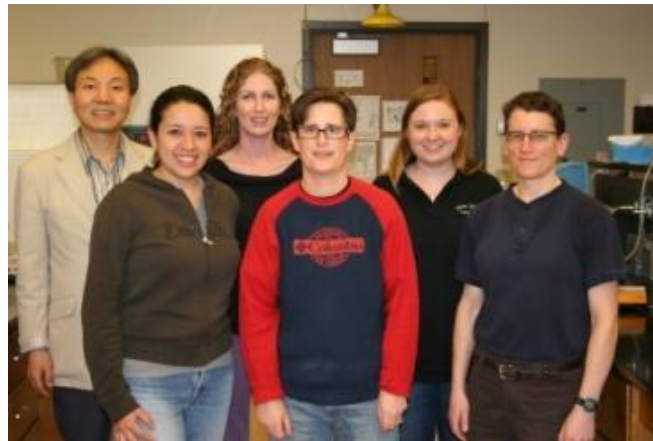
- 37% Nebraska companies
- 63% out-of-state companies



- 75% small to mid-size companies
- 25% are extremely small (1 person or family companies)

Quality Police Statement

“To ensure accurate and timely laboratory services and to continuously meet or exceed the stated or implied expectations of our clients through day-to-day interactions.”



Applied Research and Engineering Unit

Created in Summer 2008

Mission Statement:

The Applied Research & Engineering team's mission is to provide expertise in the areas of farm-to-table food processing and pet food manufacturing with an emphasis on process engineering, food safety, product development, and the economics associated with those enterprises.

Objectives

Service

To offer technical expertise to The Food Processing Center clients, such as in the area of product development of value-added foods.

Research

To conduct broad-based, integrated research that is directly applicable to various sectors in the food and pet food industries.

Outreach and Education

To expand industry partnerships through outreach activities, workshop participation, and to offer enriched, real-world educational experiences to FDST undergraduate and graduate students.

Food Processing Center Initiatives

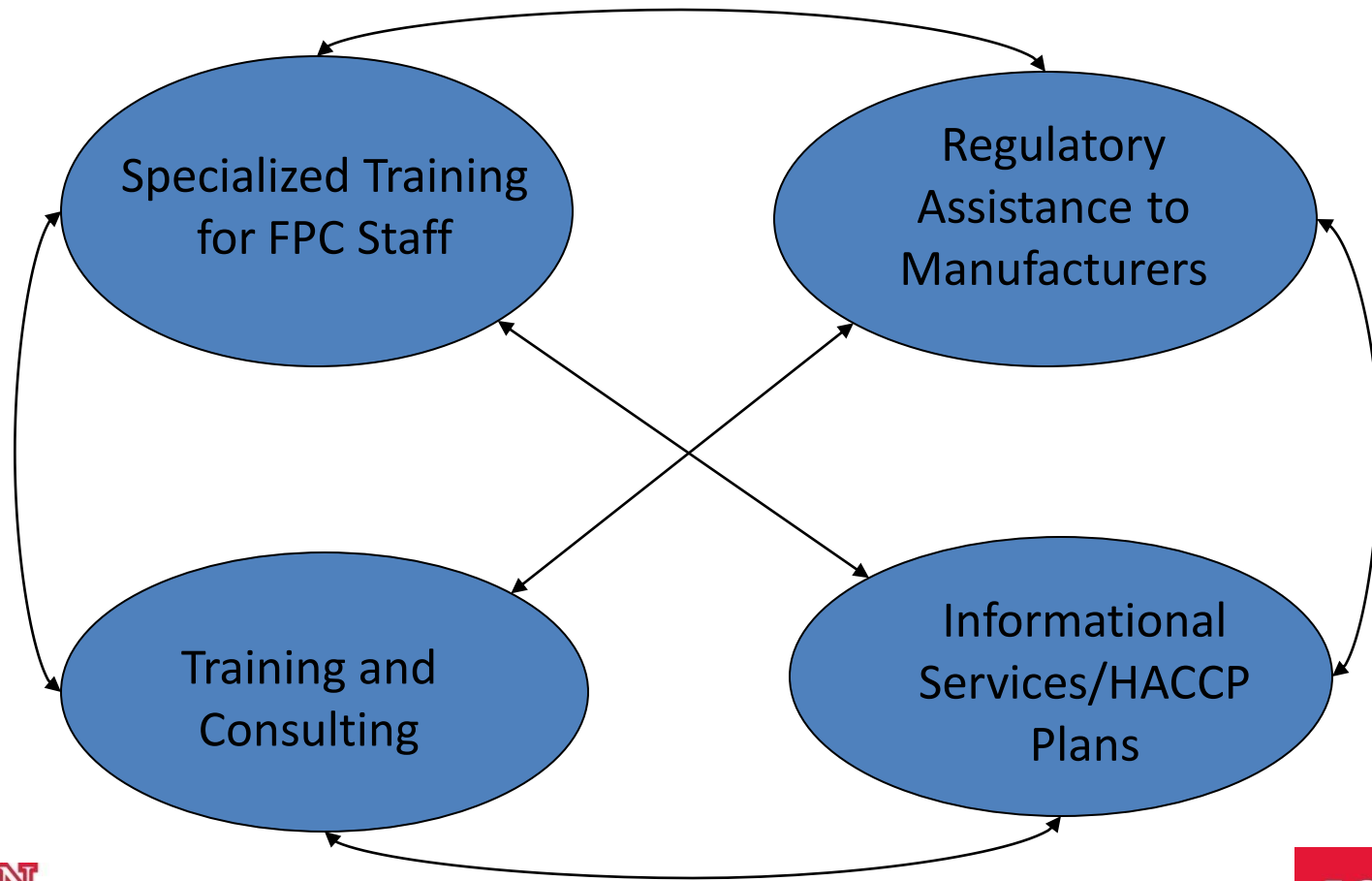
- Regulatory Assistance through a Safe Quality Foods Training Center
Leaders: Jayne Stratton
Lori Byrne
- Companion Animal Wellness through Food Safety Strategies Program
Leaders: Jayne Stratton
Andreia Bianchini
- Applied Data And Research Information Management Initiative
Leaders: Gayaneh Kyureghian
Suzanne M Weeder Einspahr
- Byproduct utilization and Product Innovation
Leaders: Steven L. Stephens
Wajira S. Ratnayake
- Food Strategy School for High Potential Food Manufacturers
Leaders: Steve Pharr
Mark Hutchison

Regulatory Assistance through a Safe Quality Foods Training Center

Mission: To develop a Global Food Safety Initiative (GFSI) recognized Training Center to address food safety issues and audits for the small and mid-size food manufacturers.

Program Leaders: Jayne Stratton, Ph.D
Lori Byrne

Program Concept & Description



Resources

Personnel



Jayne Stratton



Lori Byrne



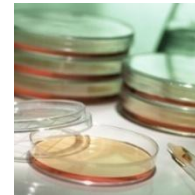
Andrea Bianchini



Steve Stephens

Additional Trainers

Facilities & Resources



Lab



Classrooms



Nebraska Association
for Food Protection

Outcome



New Clientele



THE FOOD PROCESSING CENTER
AT THE UNIVERSITY OF NEBRASKA-LINCOLN

FOOD FROM THOUGHT

fpc.unl.edu



Workshops

FOOD
FROM
THOUGHT



Companion Animal Wellness through Food Safety Strategies Program (CAWFSS)

Mission: To develop a resource of reliable information on contemporary food safety issues for the pet food industry and to provide expertise in testing and research services relating to pet food safety and security.

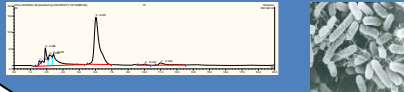
Program Leaders: Jayne Stratton, Ph.D

Andreia Bianchini, Ph.D

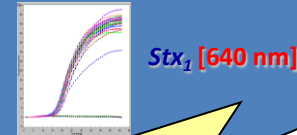
Program Concept & Description

❖ **New technology** for identifying and detecting pathogens, molds, and mycotoxins

Specialized Testing

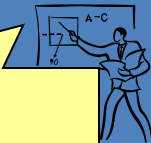


Research



❖ Reduction of *Salmonella* in pet food through the use of treatments such as **high pressure processing, new additives, natural preservatives**

Training/Consulting



HACCP, BPCS, Molds & Mycotoxins, Sampling, Risk Analysis

Informational Services



Literature reviews, risk analysis, market surveys, industry trends

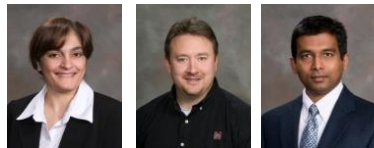


Resources

Personnel



Co-directors

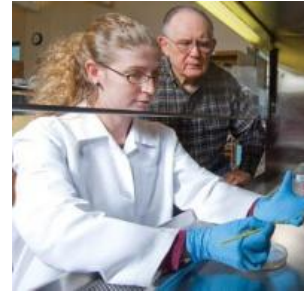


ARE Unit



FPC Staff

Facilities & Equipment



Lab

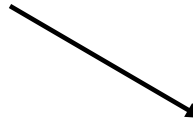


Pilot plants

Outcome



Food Technology
for Companion Animals



Workshops



Expand Clientele

Molds and Grain Storage Problems

- Mold and mycotoxin problems can occur in the field or during storage
- In the field:
 - Some weather conditions (drought periods or wet harvesting) can lead to mold growth and toxin production

- In storage:

High humidity and moisture problems
(14-30%)

Warm temperatures
(75-100°F; 25-35°C)

Fluctuating and low temperatures

Insect and mite activity

Length of storage time



**Mold Growth and
Mycotoxin
Production**

Workshop: Managing Molds and Mycotoxins in Stored Grains

The Food Processing Center - University of Nebraska-Lincoln
With support from Nebraska Feed and Grain Association

Tuesday June 29, 2010
University of Nebraska-Lincoln
216 Chase Hall
Lincoln, NE

- Concerns of molds and mycotoxins in stored grains
- Basic understanding of the molds and mycotoxins that occur in cereal grains and practical methods for detection and semi-quantitation of mycotoxins
- Proper storage and handling practices to prevent mold growth and mycotoxin production
- Current condition of stored grains in Nebraska and other states, resulting from a wet harvest season
- Potential threat of human and animal diseases associated with moldy grain and handling of moldy grain



THE FOOD PROCESSING CENTER
AT THE UNIVERSITY OF NEBRASKA-LINCOLN
FOOD FROM THOUGHT
fpc.unl.edu

FOOD
FROM
THOUGHT



**THE FOOD PROCESSING CENTER
AT THE UNIVERSITY OF NEBRASKA-LINCOLN**

FOOD FROM THOUGHT

fpc.unl.edu

