Sensors, Smart Packaging and Big Data for Food Safety Engineering

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Objectives/Value Proposition

Improve food safety and traceability from “Farm-to Fork” through sensors, smart processes and packaging, and big data approaches
Motivation

• Blue Bell Ice Cream
  5-year Listeria outbreak 2010-2015
  multi-state
  10 illnesses, 3 deaths

• Romaine lettuce (April 2018)
  E. Coli outbreak
  Multi-state
  60+ seriously ill, including kidney failures

• Food Safety Modernization Act (FSMA) was introduced to improve food inspection but FDA did not have enough manpower for its successful implementation

• Lack of smart processes and traceability in food industries
Approach

• Farm to Fork approach for holistic food safety
• Focus on ready-to-eat food (produce, dairy, etc.)
• Embed sensors in food processes and packaging to enable smart manufacturing and traceability
• Design processes and packaging for preventing/removing contaminants and enhancing safety
• Harness emerging capabilities of “big data” networks for managing traceability within global supply chains
Seed Grant Activities

- Embedded Sensors
- Smart Processing
- Smart Packaging
- Big Data

Food safe microstructured antimicrobial coatings

Phase change packaging to prevent spoilage

Embedded sensors for monitoring and traceability

Light source

Photodetector or spectrometer

Optical fiber spool