Office of Public Health Science, FSIS

Food Safety and Inspection Service Research Priorities

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FSIS Overview

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- USDA/FSIS is a public health regulatory agency
  - Farm-to-table food safety system
- Ensure meat, poultry and processed egg products are safe, wholesome, and accurately labeled and packaged
  - ~ 7,600 full-time inspectors
  - ~ 5,921 processing establishments inspected daily
  - ~ 1,100 slaughter establishments in which *every* animal is inspected
- Statutory requirements
  - Federal Meat Inspection Act, Poultry Products Inspection Act, Egg Products Inspection Act

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Public Health Context

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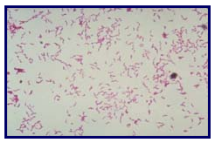
- Estimates of foodborne diseases in the U.S. per year

  (Centers for Disease Control and Prevention; Mead et al., 1999*):

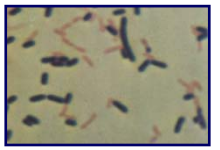
  - 76 million cases of gastrointestinal illnesses
  - 325,000 serious illnesses resulting in hospitalizations
  - 5,000 deaths

- Emerging concerns

  - STECs (non-O157), *Clostridium difficile*, highly pathogenic avian influenza, antimicrobial resistant strains
  - dioxin, melamine, other chemical contaminants

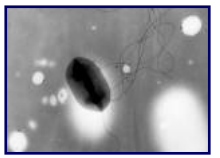


Campylobacter



Listeria monocytogenes

Salmonella



E. coli O157:H7

* Updated burden estimates expected from CDC in 2009

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Research Priorities

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- Ecology/Epidemiology foodborne pathogens
- Pathogen modeling
- Methods for detecting and characterizing pathogens
- Management practices/interventions to reduce pathogens
- Chemicals, toxins, & veterinary drugs
- Consumer behavior

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Ecology and Epidemiology of Foodborne Pathogens on the and throughout the farm to table continuum

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- On the farm
  - Prevalence of pathogens
  - Sources and transmission
- During transport
  - Changes in pathogen prevalence during transport
- At slaughter
  - Incoming pathogen load
- Retail
  - Harborage of pathogens & cross contamination

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Pathogen Modeling

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- Valid cooking time-temperature for not-ready-to-eat product
- Cooking times for tenderized meat and poultry products
- Cooking and cooling models

Methods for detecting and/or characterizing human foodborne pathogens

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- Screening
- Culture and identification of pathogens in food matrices
- Serotyping/Subtyping
- Identification of virulence factors

Management Practices & Interventions to Reduce Human Foodborne Pathogens

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- On the farm
  - Impact of feed
- During transport
  - Effectiveness of cleaning transport vehicles
- At slaughter/processing
  - Reduction of organisms from interventions
- At retail
  - Effectiveness of growth inhibitors in ready to eat product

Chemicals, Toxins, Veterinary Drugs

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- Screening methods
- Confirmation methods
- Surveys/baselines
- Incurred residues

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Consumers

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- Handling
  - Refrigerated products
  - Cooking
- Cross contamination in the home
- Consumption data
- Human dose response data for pathogens

Possible Interactions with DOE Laboratories

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- Oak Ridge National Laboratory (ORNL)
  - Stored FSIS data on a secure server for the data warehouse predictive analytics project
  - Current contract between ORNL and FSIS OPHS Risk Assessment Division
    - FSIS Catfish Risk Assessment
    - Toxicological Excellence in Risk Assessment training
- Lawrence Livermore
  - Could develop methods to detect chemicals in food matrices
- FSIS research needs: baseline data

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Contact Information

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