

“Trend in Food Safety in Food Innovation”



25 มีนาคม 2560
ห้อง Meeting room 3 ศูนย์การประชุมแห่งชาติสิริกิติ์

น.สพ.รจเวทย์ ทหารแก้ว
รองกรรมการผู้จัดการใหญ่
ศูนย์วิจัยและพัฒนา
บริษัท เบทาโกร จำกัด (มหาชน)



2016 Food Safety Survey

**Amy Lando
Linda Verrill
Sherry Liu
Ella Smith**

**Consumer Studies Branch
Division of Public Health Informatics & Analytics
Office of Analytics and Outreach
Center for Food Safety and Applied Nutrition, FDA**

Summary

Perceptions and awareness of food risks:

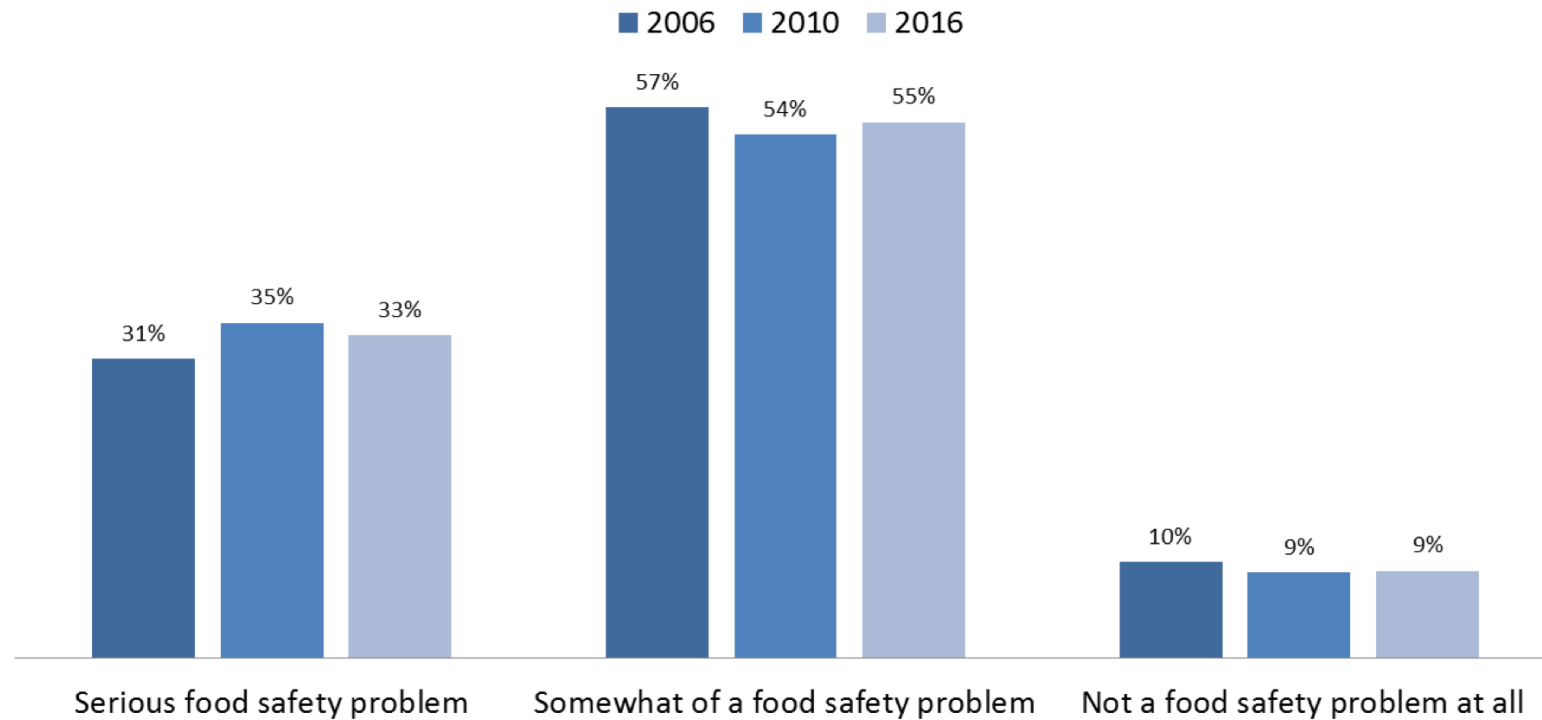
- **Consumers are somewhat concerned about getting a foodborne illnesses from how *they* prepare food** – but they think it is more likely to get a foodborne illness from food prepared at a restaurant compared to food prepared at home.
- **Consumers are more concerned about raw chicken and raw beef being contaminated than other raw foods** – In 2016, the percent of respondents who thought that raw chicken (66%) and raw beef (41%) were “very likely” to have germs was higher than the 6% who thought the same of raw vegetables.
- **Awareness of *Listeria* is increasing** – Awareness increased from 30% in 2006 to 58% in 2016. Awareness remains high in 2016 for *Salmonella* (93%) and *E. coli* (89%), and remains low for *Campylobacter* (16%).



RISK PERCEPTION

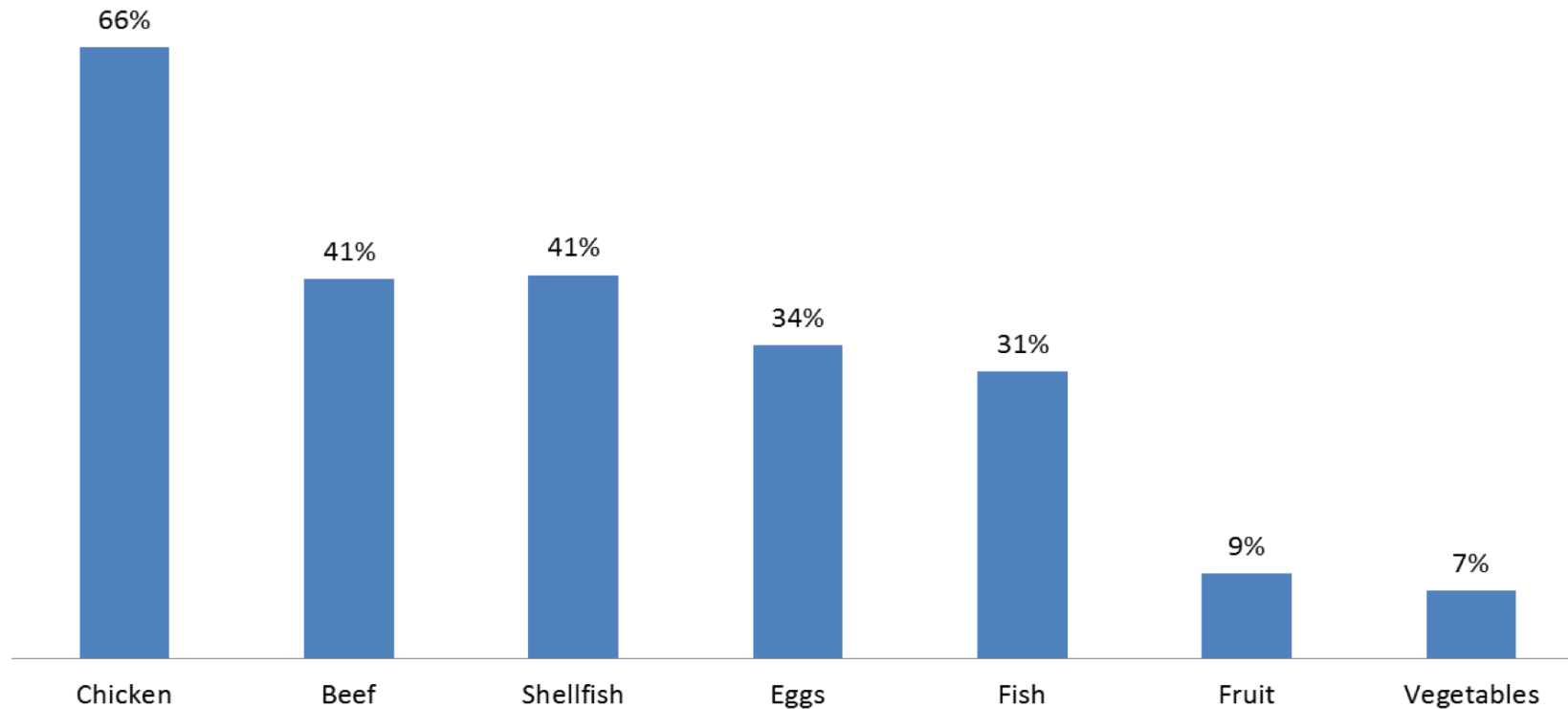
In all survey years, about a third of all respondents thought that food contamination by germs is a serious food safety problem.

Do you think contamination of food by micro-organisms, such as germs, is a serious food safety problem, somewhat of a problem, or not a food safety problem at all?



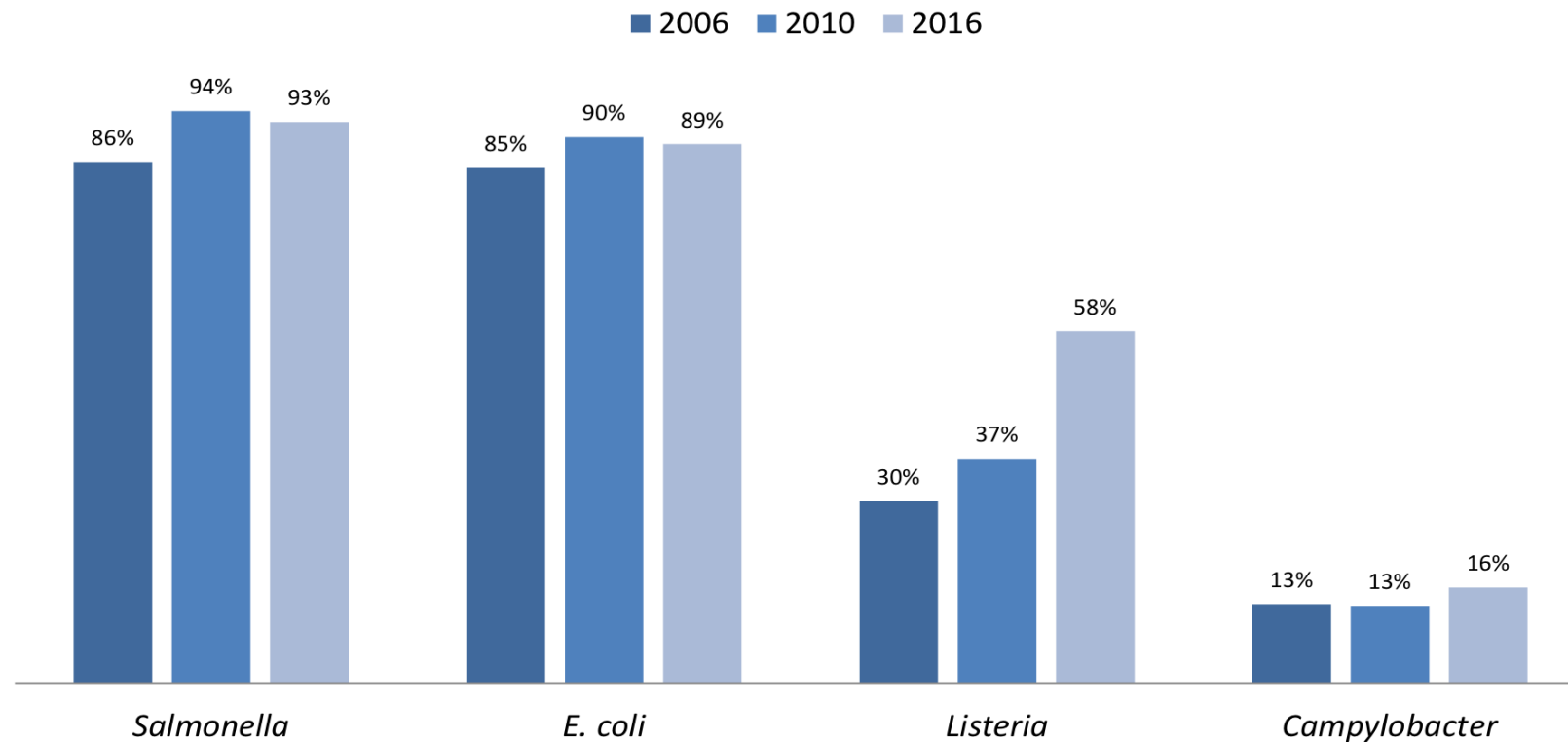
Animal protein foods are considered more likely to have germs compared to fruits or vegetables.

Percent of respondents who thought that each food was “very likely” to have germs in 2016



In all survey years, more respondents had heard of *Salmonella* and *E. coli* as problems in food than *Listeria* or *Campylobacter*.

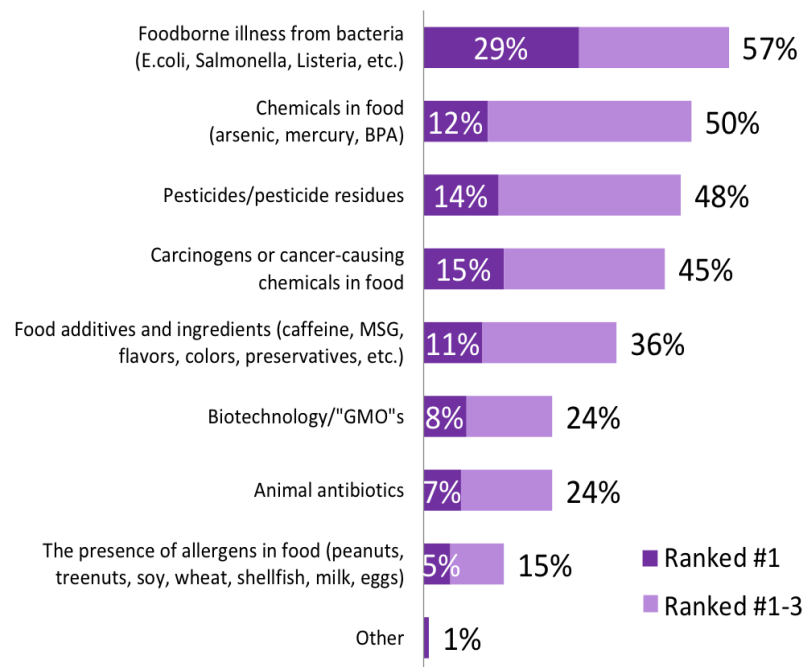
Have you ever heard of [] as a problem in food?



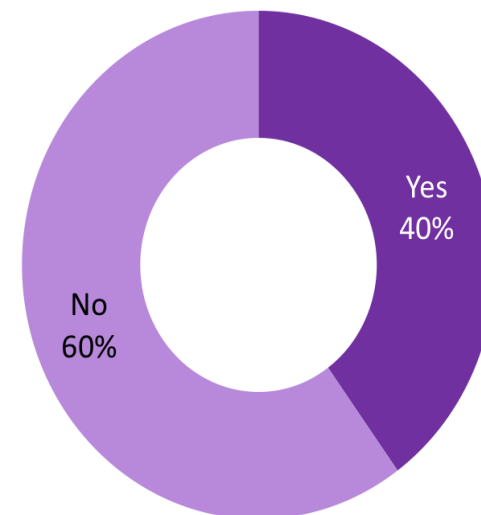
Foodborne illness from bacteria, chemicals in food and pesticides are the most important food safety issues today.



In your opinion, what is the most important food safety issue today? (Please rank from 1 to 3, with 1=Most Important.)



Have you changed your eating habits because of something you've heard or read about food additives and ingredients, chemicals in food, or carcinogens in food?



2016 n=1,003; if respondent chose food additives, chemicals in food, or carcinogens or cancer-causing chemicals in food as food safety issue n=386

Detection of Food-Borne Pathogens in Food Processing Plants

DNA-based detection method is preferred over conventional methods

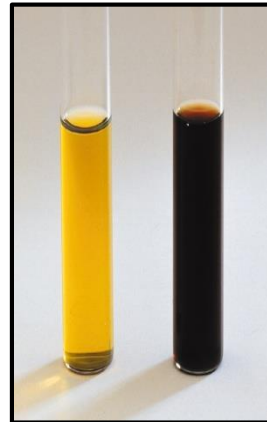
- One-day Testing
- Multiple target testing capability
- Pathogens identified to level of species/serovars
- Tracing source of contamination (DNA fingerprinting)

Probe Array Test

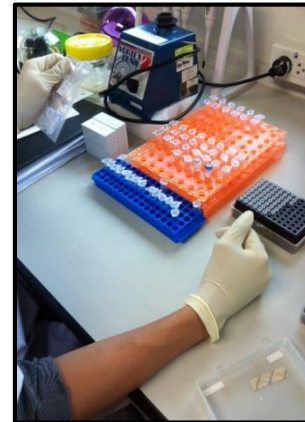
- PCR-based detection method
- Hybridization to specific probe



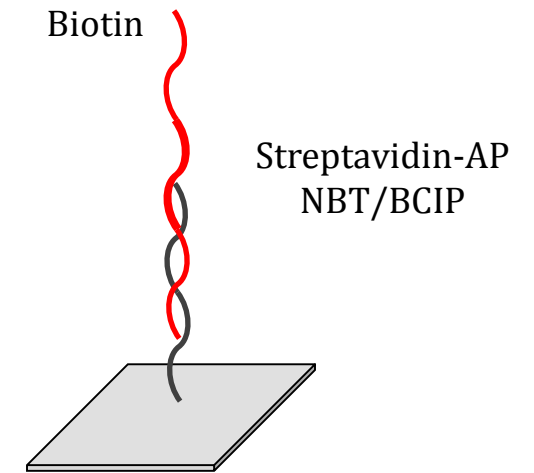
Samples



Pre-enrichment

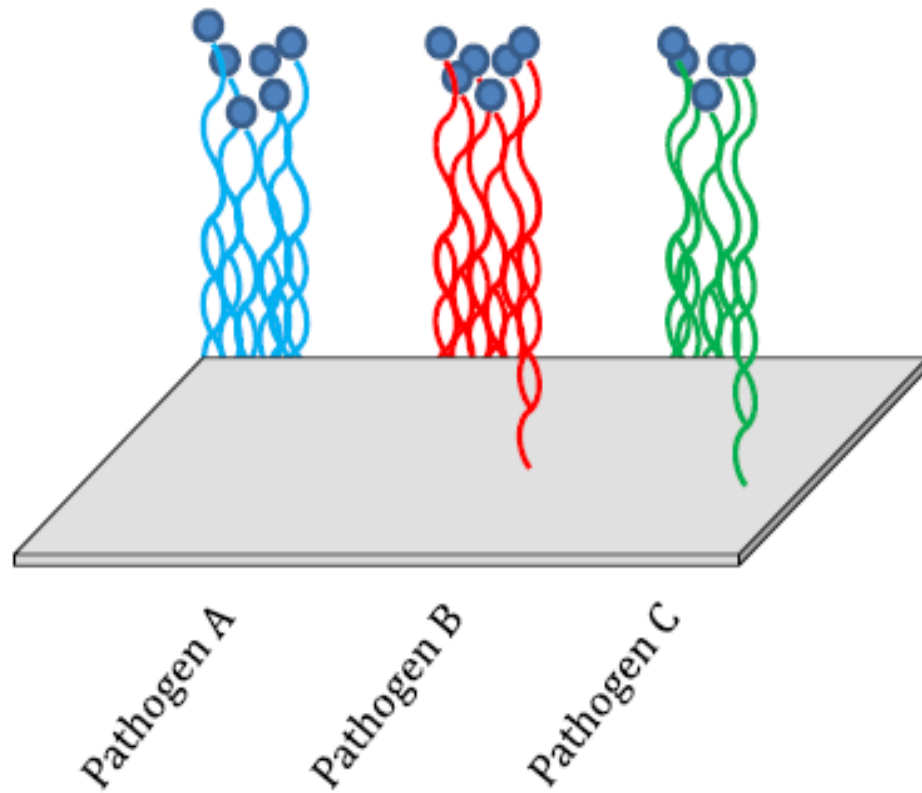


DNA Extraction
Multiplex PCR

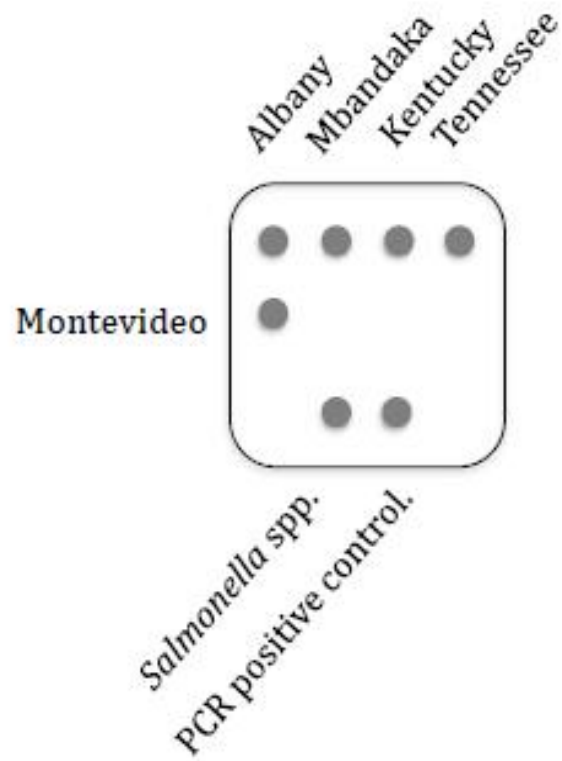


Hybridization
Color development

Multiple targets can be detected and identified simultaneously



Capable of testing mix culture, no colonies isolation is required



Albany

Mbandaka

Kentucky



Tennessee

Montevideo

NTC

Detection of Food-Borne Pathogens in Food Processing Plants

Probe Array method

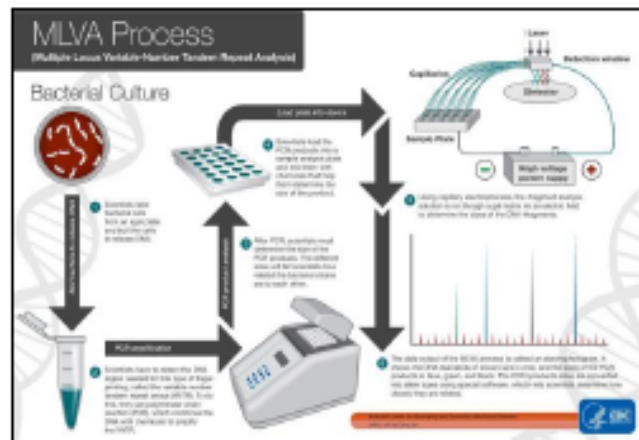
Salmonella

Typhimurium
Enteritidis
Infantis
Hadar
Virchow
Albany
Mbandaka
Kentucky
Tennessee
Montevideo

Listeria

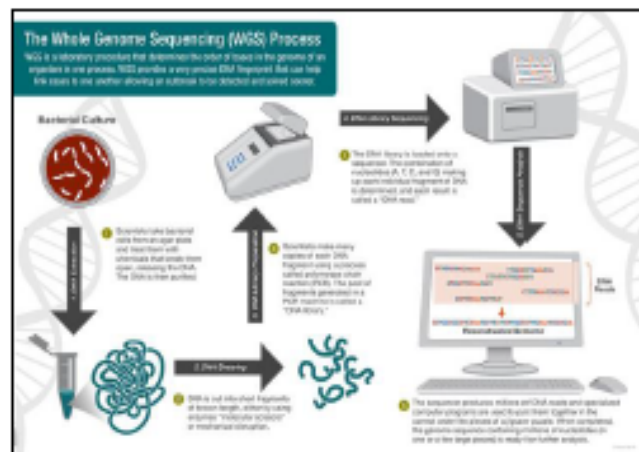
L. monocytogenes
L. innocua
L. ivanovii
L. seeligeri
L. welshimeri
L. grayi

Tracing source of bacterial contamination



MLVA process (copy-number variable regions)

- only snapshot picture (certain regions of genome measured)
- species/serovar specific protocol
- Protocol for species/serovars of interest need to be developed first



Whole genome sequencing

- complete picture
- applicable to any bacterial species without pre-developed protocol
- Proven to reduce Listeriosis outbreak by CDC

www.cdc.gov