

# CDC Vision for the Future



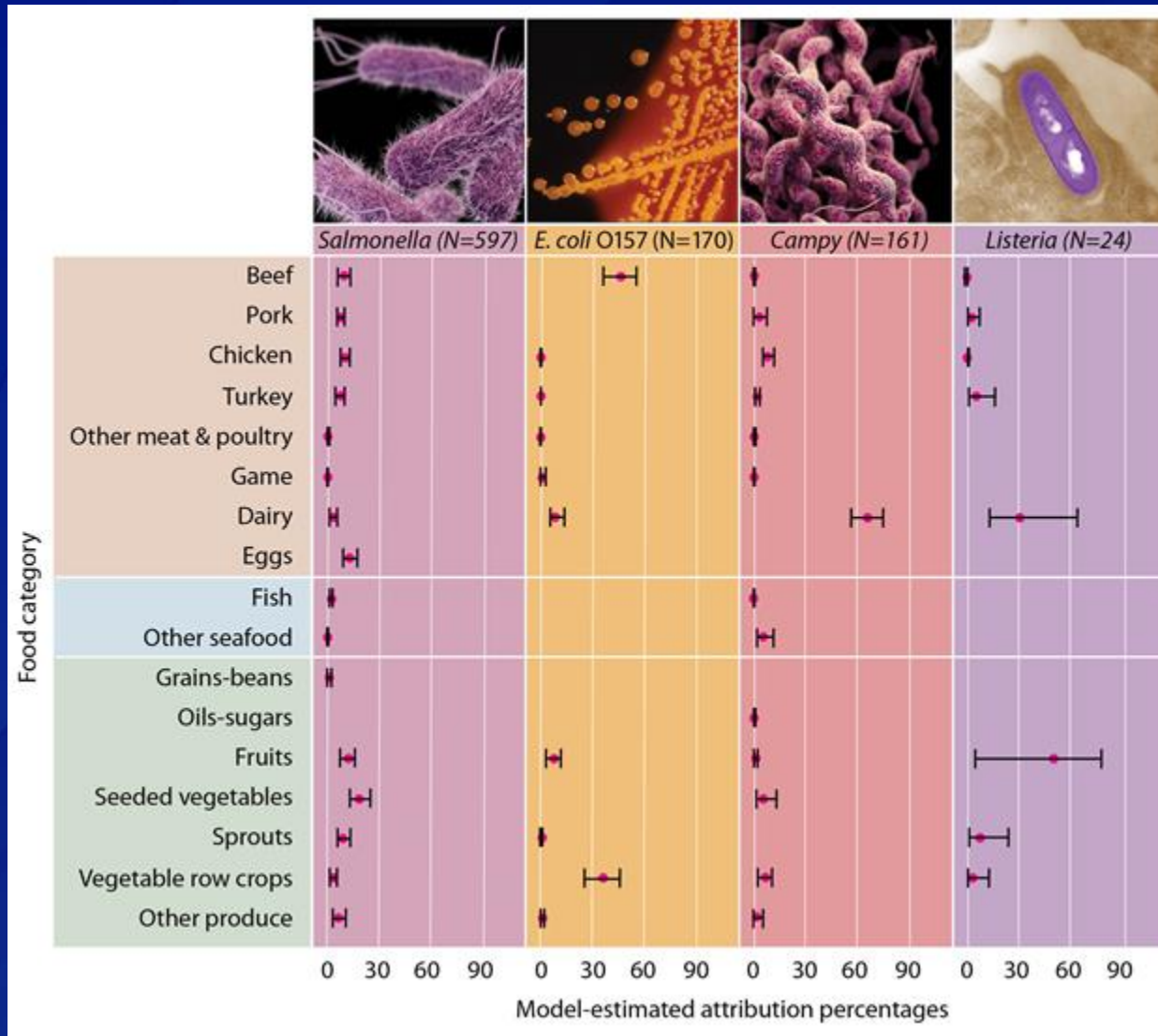
**Christopher R. Braden, M.D.**

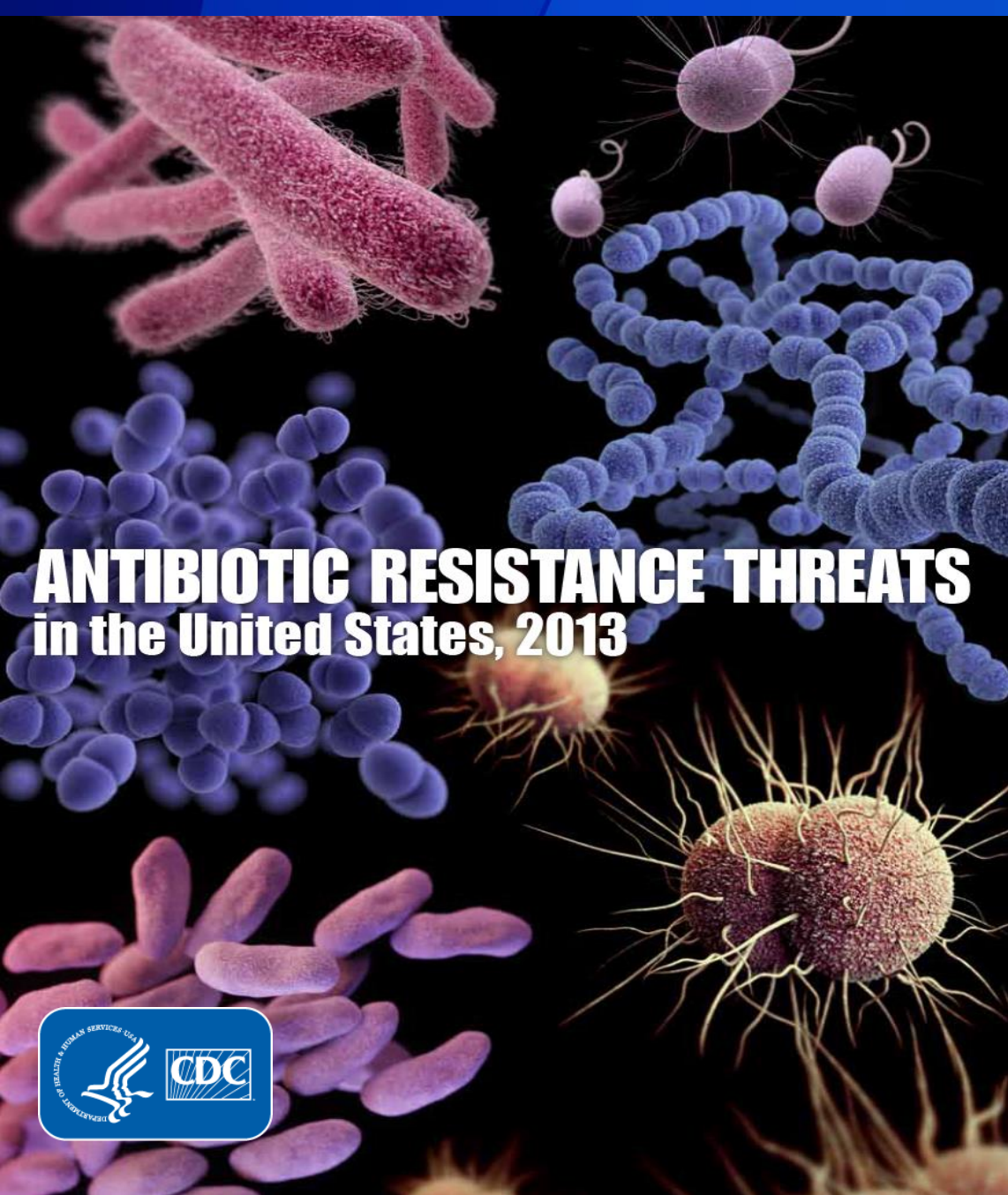
Division of Foodborne, Waterborne and Environmental Diseases  
National Center for Emerging and Zoonotic Infectious Diseases  
Centers for Disease Control and Prevention

# Where CDC Makes a Difference

- ❑ Drive policy and prevention with data and analyses
- ❑ Investigate outbreaks to stop them and prevent the next one
- ❑ Apply advanced technology and address challenges of culture-independent diagnostic testing (CIDT)
- ❑ Support state and local surveillance and response capacity

# Number of outbreaks, model-estimated attribution percentages, and 90% credibility intervals, for *Salmonella*, *E. coli* O157, *Campylobacter*, and *Listeria*: United States, 1998-2012





# ANTIBIOTIC RESISTANCE THREATS in the United States, 2013



**CDC report released  
September 17, 2013**

Resistance in 18 pathogens

Burden

2,049,000 illnesses

23,000 deaths

4 of the 18 often transmitted  
through foods

2 with animal reservoirs  
2 with human reservoirs

# Antibiotic Resistance Solutions Initiative

## \$264M: A Comprehensive Response

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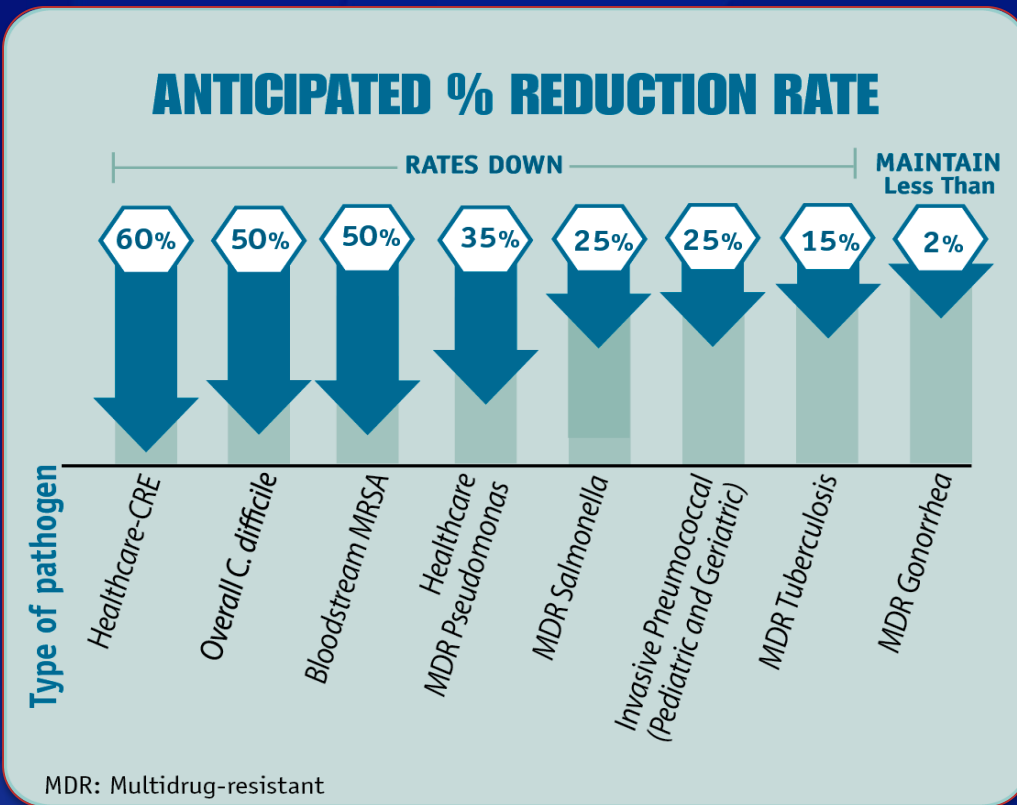
The FY 2016 Budget requests more than \$264 million to support:



- Antibiotic stewardship
- Outbreak surveillance
- Antibiotic use and resistance monitoring
- Research and development related to combating antibiotic resistance

# AR Initiative: projected results

AR Initiative could achieve reductions in many infections



Reducing *C. difficile* (healthcare-associated) by 50% would:

- Save **20,000** lives
- Prevent **150,000** hospitalizations
- Cut **>\$2 billion** in health care costs

# WGS Condenses Lab Workflows

## Example: STEC

### Current Testing

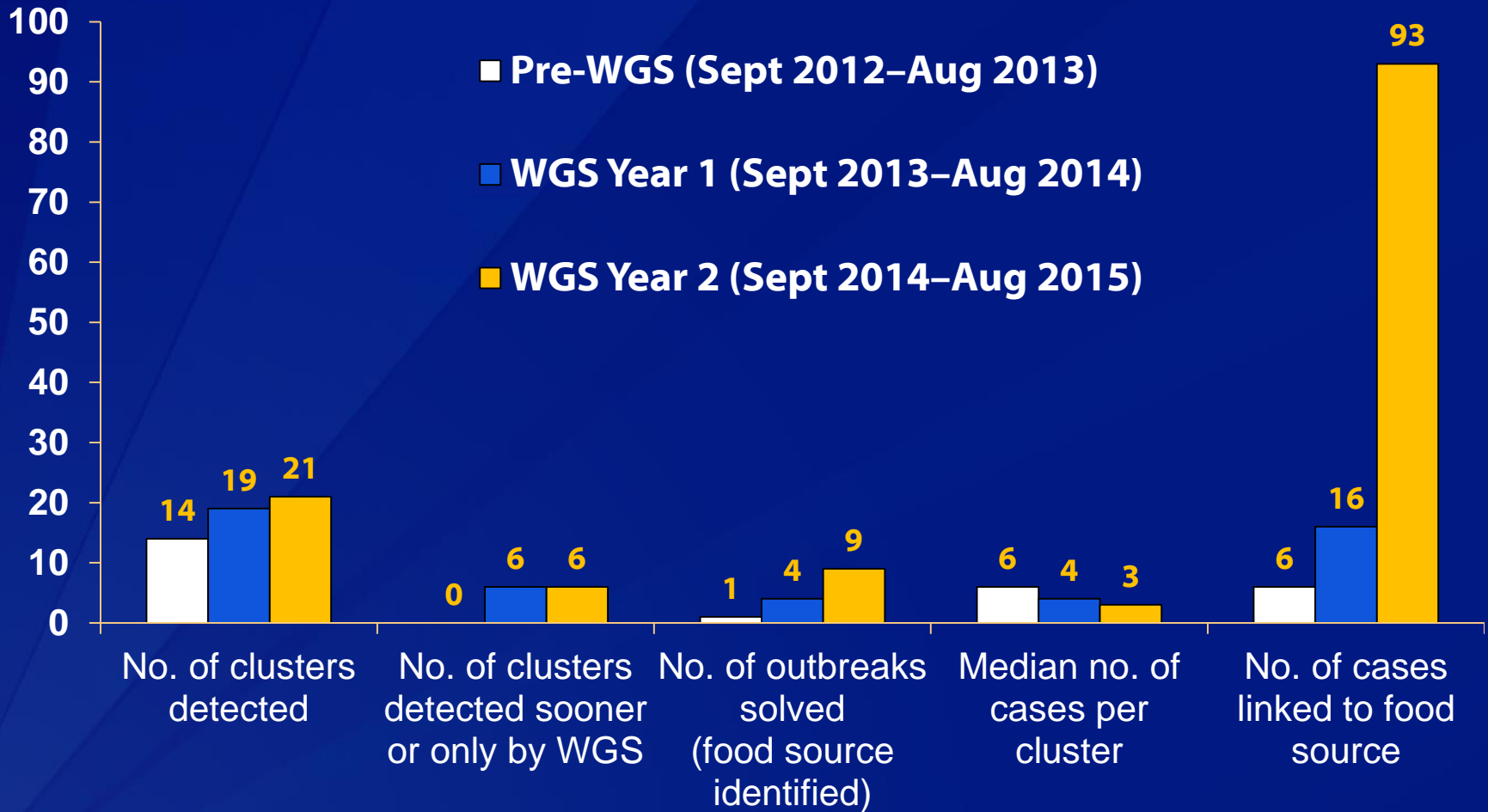
- Identification
- Serotyping
- PCR virulence profile (4 targets)
- PFGE
- MLVA
- AST



### ID and Characterization by WGS



# Listeria Cluster Metrics Before and After WGS





# FDA-CDC

## Coordinating WGS Support for States

### ❑ FDA GenomeTrakr

- Food and environmental pathogens
- FY2015 funding for 10 state public health or agriculture laboratories
  - Equipment, reagents, personnel (some states)

### ❑ CDC Epidemiology and Laboratory Capacity

- Surveillance, outbreak detection and response
- FY2015 funding for ~20 public health laboratories
  - Reagents

### ❑ Training

- Equipment, software, procedures
- CDC personnel at FDA sponsored training and vice versa

# The Challenge

## Culture vs. Non-Culture Laboratory Tests

### Clinical laboratory



Culture on petri dish



Luminex xTAG GPP

### Public health laboratory



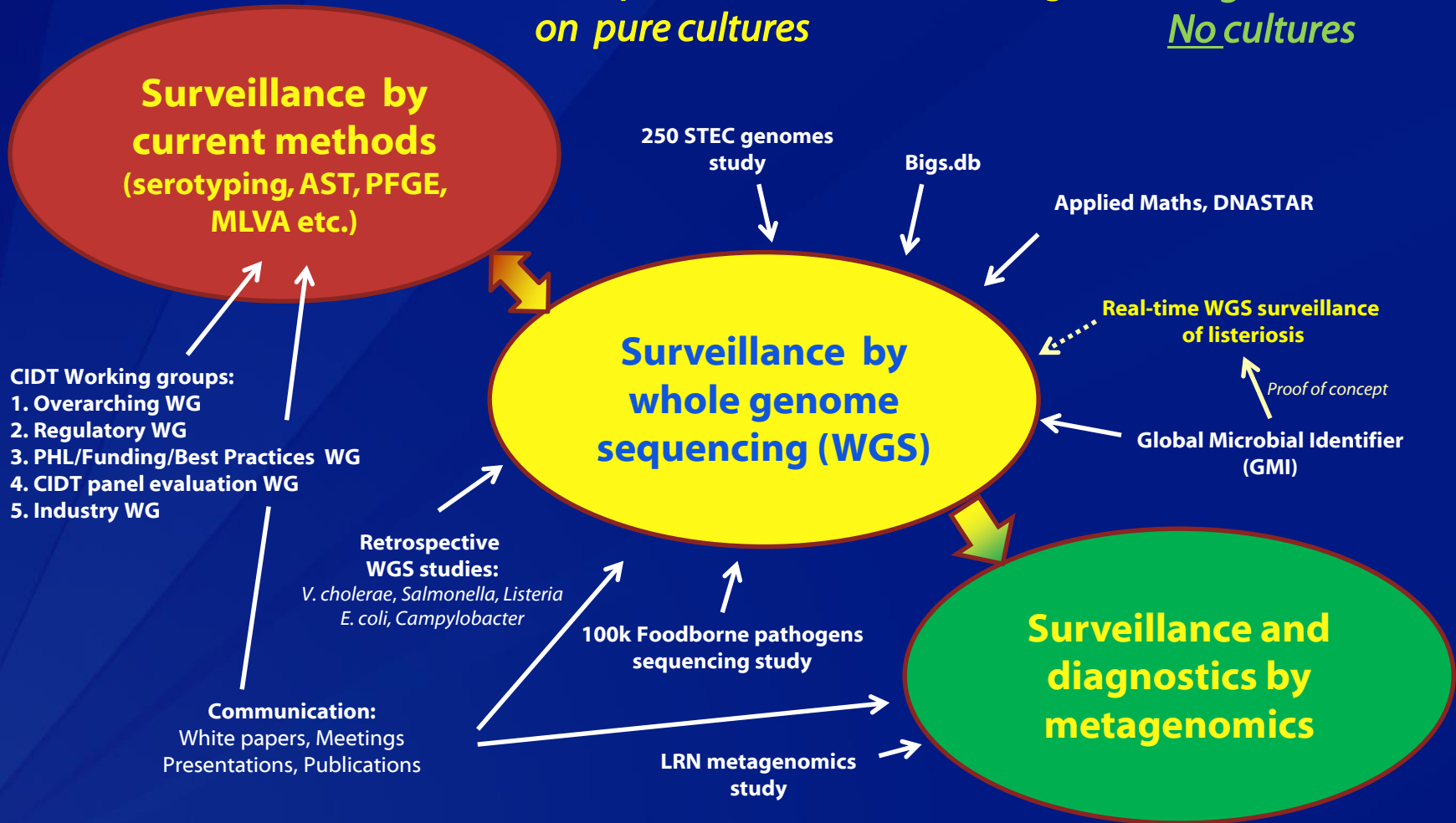
PulseNet "fingerprints"



No PulseNet "fingerprints"

# Laboratory Strategy to Meet The Challenge of Culture Independent Diagnostic Methods (CIDT)

1. Preserve access to cultures 2. Prepare for the future working on pure cultures 3. Metagenomics No cultures



# Supporting State and Local Capacity

## ❑ **Epidemiology and Laboratory Capacity**

- Advanced Molecular Detection Initiative
- FoodCore
- PulseNet
- OutbreakNet (enhanced), NORS, NARMS, Cyclospora
- CaliciNet, NoroSTAT
- Integrated Food Safety Centers of Excellence

## ❑ **EHS-Net**

## ❑ **Emerging Infections Program**

- FoodNet

## ❑ **Cross-cutting programs**

- PHEP, PPHF, Prevention Block Grant

# Thank You

**For more information please contact Centers for Disease Control and Prevention**

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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