

# PADLS New Bolton Center

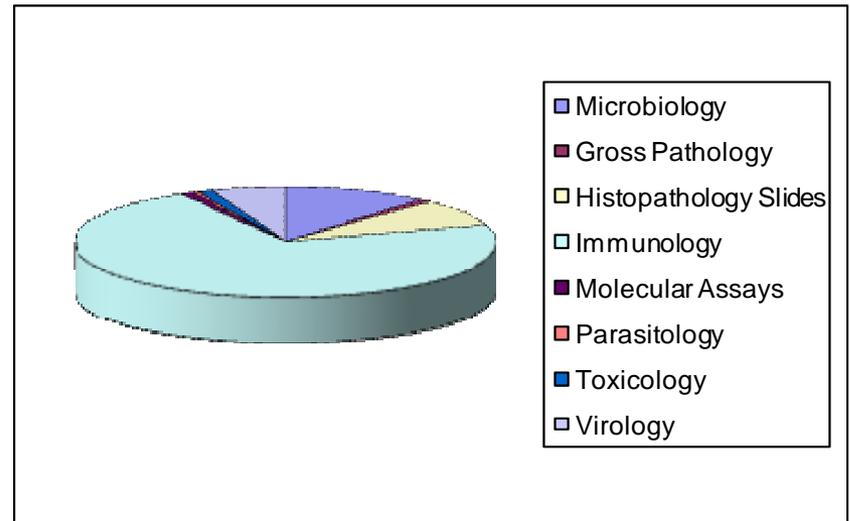
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# Pennsylvania Animal Diagnostic Laboratory System (PADLS)

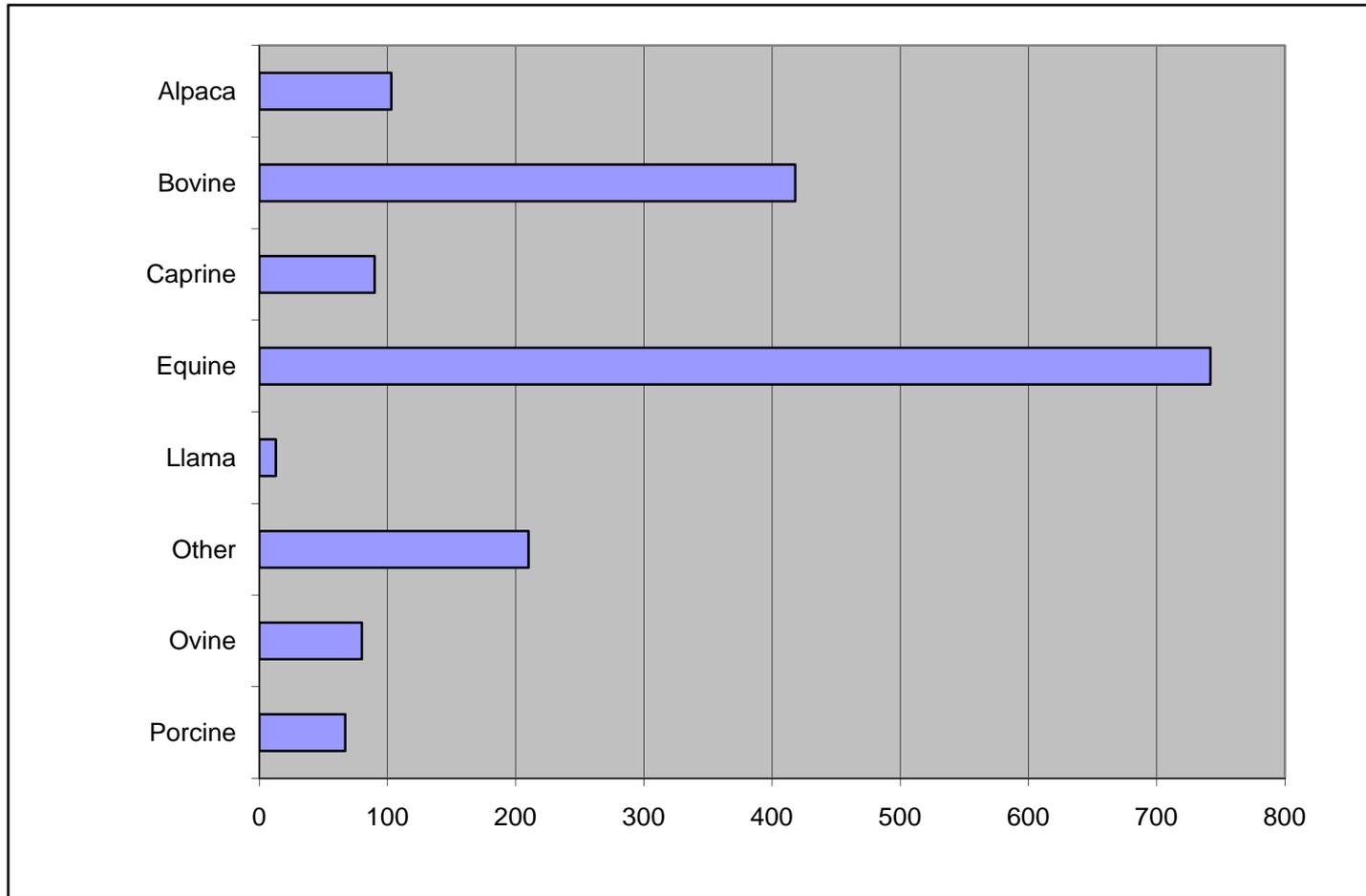
- Established by the Pennsylvania Animal Health and Diagnostic Commission (AHDC) in 1991 in order to provide rapid and accurate diagnostic assistance to veterinarians involved with food-fiber animals, equine, aquaculture and wildlife
- Protecting animals and humans from health threats by providing accurate diagnoses to assist Pennsylvania's agricultural community in controlling diseases to minimize economic loss

# New Bolton Center University of Pennsylvania

- 416,604 total specimens tested 2008-2010
- 415 mammalian field investigations
- 93 avian field investigations
- Program testing:
  - Avian influenza 276,545
  - CWD 3,709
  - PEQAP 210,040

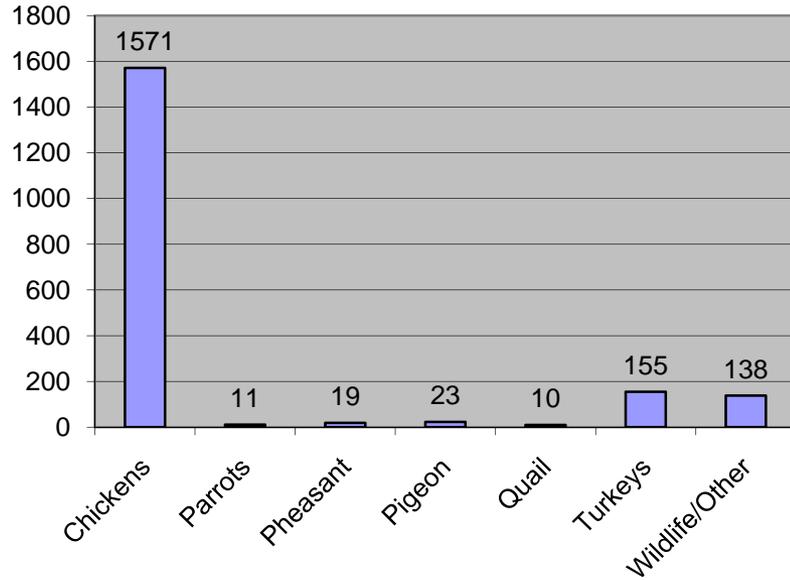


# Mammalian Necropsies 2008-2010

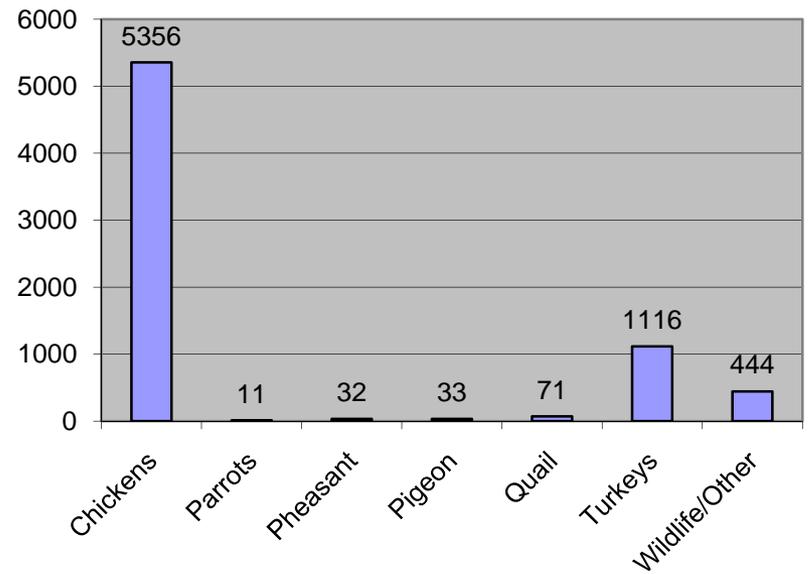


# Avian Necropsies 2008-2010

## Number of Cases



## Number of Birds



# Microbiology Laboratory

- Clinical Diagnostic lab
  - Aerobic, anaerobic, fungal cultures
  - Bacterial & fungal ID by DNA sequencing
  - Serology tests
  - Diagnostic PCR – *Salmonella*, *Campylobacter*, *E. coli* O157:H7, *Strep. equi*, PRRSV
- Salmonella Reference Center
  - Serotyping
  - PCR
  - PFGE
- Pennsylvania Egg Quality Assurance Program

# PEQAP

## Pennsylvania Egg Quality Assurance Program

- A **voluntary** industry program intended to minimize *Salmonella enteritidis* contamination of eggs
- Pennsylvania Department of Agriculture provides oversight, technical advice and financial assistance
  - More recently the producers have contributed to the costs associated with lab testing
- PEQAP participants are assuring the public that they are taking every reasonable precaution to ensure the safety of shell eggs

# PEQAP

## Pennsylvania Egg Quality Assurance Program

- Pennsylvania was the first state in the nation to institute steps to reduce the risk of SE with an effective flock testing and management program.
- This program does not guarantee shell eggs to be free of SE but does assure commitment of the producer to implementation of those management and monitoring practices most likely to prevent SE contamination.

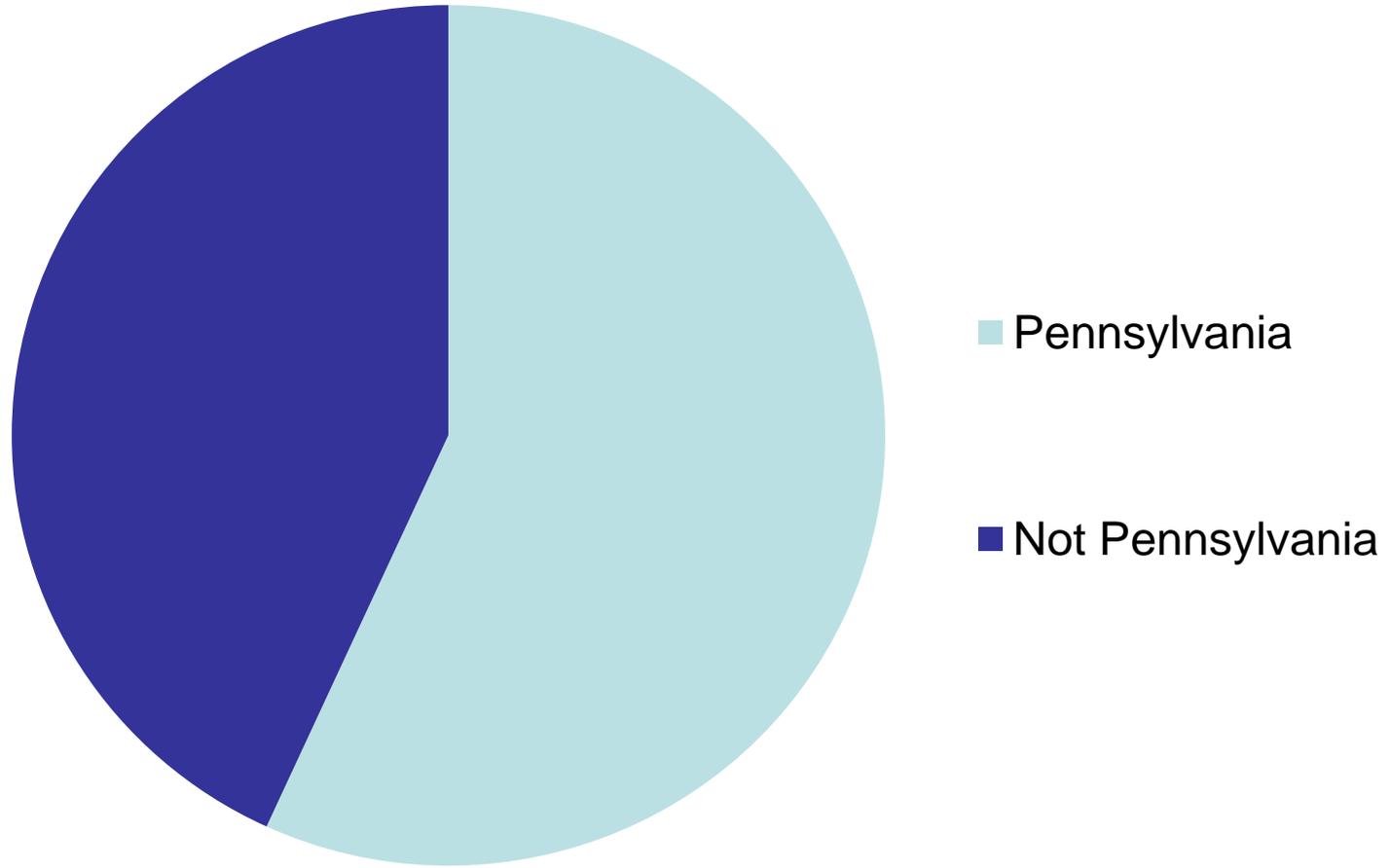
# Success of PEQAP

| Year | % Egg Positive | % Manure Positive |
|------|----------------|-------------------|
| 1992 | 23             | 38                |
| 2001 | 1.5            | 11                |
| 2009 | 0.005%         | 3.2               |

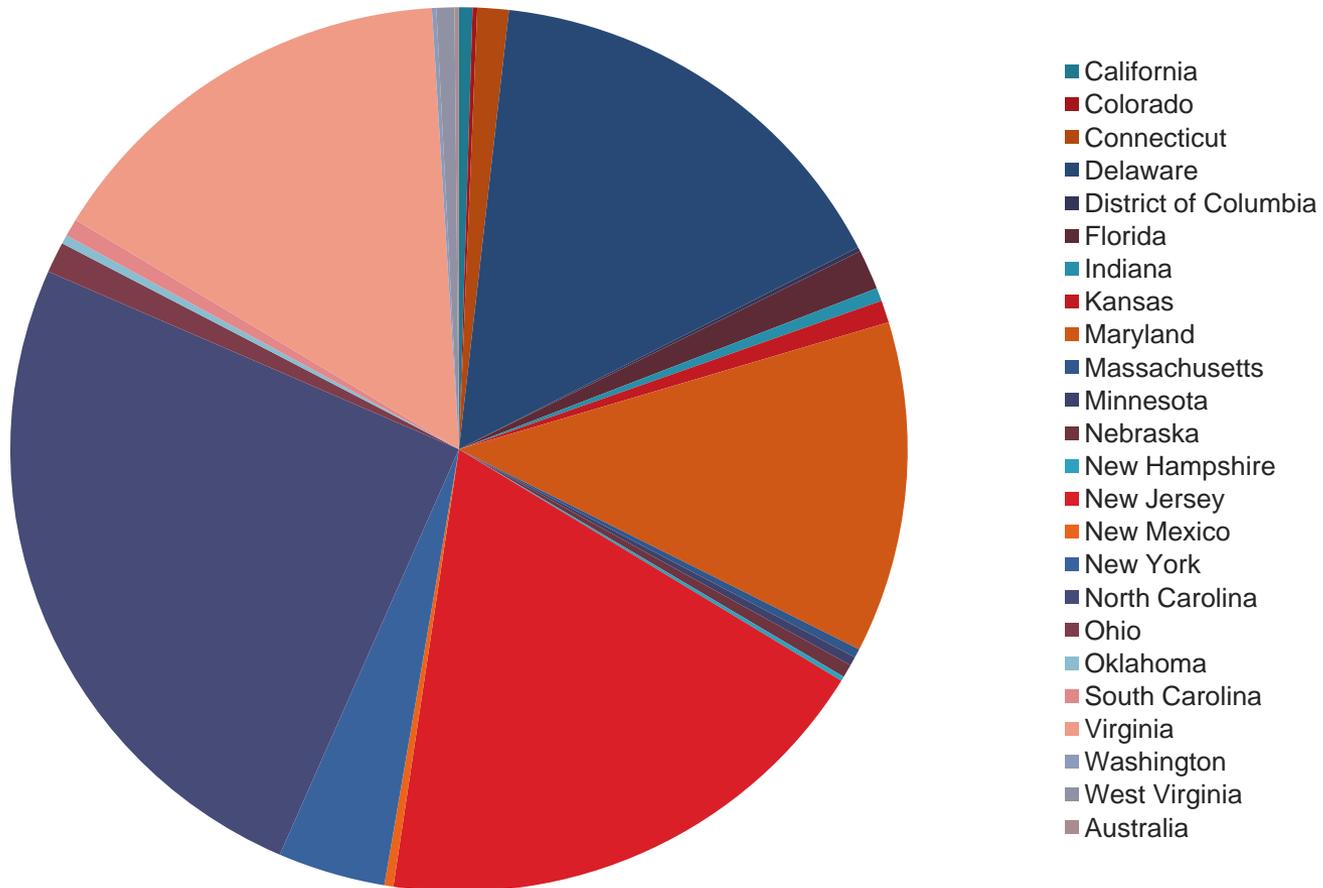
# Toxicology Laboratory

- A broad spectrum of analyses for natural and man-made toxicants performed on a wide and complex variety of sample matrices including but not limited to:
  - Mycotoxins, drugs, environmental contaminants, insecticides, rodenticides, anions, and metals
- Analyses for nutritionally-relevant compounds including metals, vitamin E, bile acids, and non-esterified fatty acids (NEFAs) performed on animal tissues, feeds, and water samples
- Case consultations and assistance in field investigations
- An active research and method development program for new and emerging toxicants, markers of nutritional status, and chemical contaminants

# Toxicology Submissions 2008



# Non-Pennsylvania Toxicology Submissions 2008



# Major Instrumentation

- ICP-MS (Inductively Coupled Plasma Mass Spectrometry)
- AA (Flame Atomic Absorption Spectrometry)
- GC-MS (Gas Chromatography)
- LC-MS-MS (Liquid Chromatography)
- HPLC (High Performance Liquid Chromatography)
- IC (Ion Chromatography)
- Microplate Reader
- Microwave Digestor

# Recent Food-Related Investigations

- A Pennsylvania producer was informed that several houses of organically-raised broiler chickens may have been maliciously contaminated with a toxic substance.
  - Working in cooperation with the producer, the Pennsylvania Department of Agriculture, and federal law enforcement officials including the Federal Bureau of Investigation (FBI), the Toxicology Laboratory was able to rapidly process hundreds of animal and environmental samples in response to a possible agroterrorist act.
- By the time all relevant analyses were completed a total of 723 separate tests had been performed.
- Test results allowed for the marketing of a safe food product and assisted federal agents in building a criminal case that eventually led to multiple federal indictments in July 2008.

# Recent Food-Related Investigations

- Approximately 80 out of 100 beef cows and calves died unexpectedly in another state after introduction of a new mineral supplement.
  - The Toxicology Laboratory was able to determine that the animals had instead been fed a soil treatment product containing an anticholinesterase insecticide and pyrethrins.
- Quick identification led to the interception of rendered products distributed to several states, including Pennsylvania, preventing incorporation into animal feeds.

# Recent Food-Related Investigations

- A bison cow collapsed and died while donating blood for her sick calf and the owner butchered the animal for human consumption.
- Following his veterinarian's advice submitted a sample of ground meat for testing.
  - The veterinary sedative xylazine, not approved for use in food-producing animals, and a trace amount of ivermectin were both detected.
- This case was referred to the Pennsylvania Department of Agriculture's Bureau of Food Safety and Laboratory Services in order for them to contact the owner to advise him not to consume or sell the adulterated meat from this animal.

# Future Directions for Food Safety

- SPME method for detecting toxins in various food matrices
  - An attractive alternative to the traditional liquid-liquid extractions commonly used in conjunction with GC/MS for the analysis of volatile and semi-volatile compounds
- Wider application of the QuEChERS method in the screening of food for contaminants
  - Rapid and highly cost-effective method for either GC/MS and/or LC/MS sample preparation

# Contact Information

[www.padls.org](http://www.padls.org)

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