ONTARIO SMALL POULTRY FLOCK DISEASE SURVEILLANCE: YEAR ONE

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CAHLN
University of Guelph
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Why?

- **Numbers:**
  - Small poultry flocks (non-quota) are becoming increasingly popular in urban and peri-urban areas
- **Epidemiology and biosecurity:**
  - Higher risk of contact with wild birds
  - Flocks might be underserviced by veterinarians
  - Close proximity to commercial poultry operations
- Small poultry flocks might also be an important source of **zoonotic pathogens** (*Campylobacter* spp., *Salmonella* spp., *E. coli*)
- **Void of knowledge** regarding prevalence of pathogens in these flocks

Objectives

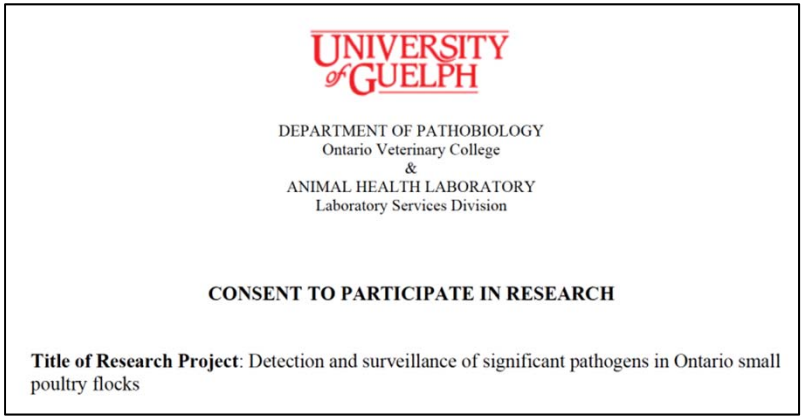
- To assess the baseline prevalence of important poultry pathogens
- To determine husbandry and biosecurity practices, and to associate certain practices to pathogen prevalence
- To assess the baseline knowledge of small flock owners regarding biosecurity → Establish the need for, and scope of, training

Methods: Eligibility

- Two-year prospective study (October 2015 – September 2017)
- *Non-commercial and non-quota* poultry **postmortem cases** submitted through the AHL (Guelph and Kemptville locations)

- To participate in the study
  - The flock must be in Ontario
  - Owner must provide:

Payment of $25 fee



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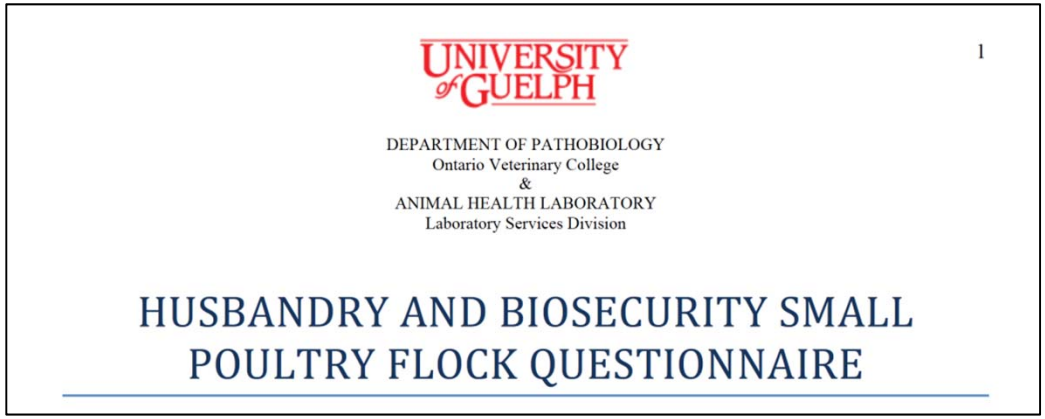
CONSENT TO PARTICIPATE IN RESEARCH

Title of Research Project: Detection and surveillance of significant pathogens in Ontario small poultry flocks



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HUSBANDRY AND BIOSECURITY SMALL POULTRY FLOCK QUESTIONNAIRE

Methods: Tests

Pre-set viral tests:

- APMV-1, PCR - tracheal/cloacal swabs
- AIV, PCR - tracheal/cloacal swabs
- ILTV, PCR - tracheal swab
- IBV, PCR - tracheal/cloacal swabs
- IBDV, PCR - cloacal swab
- FAdV, PCR - cloacal swab
- ARV, PCR - cloacal swab
- Avian bornavirus, PCR - brain

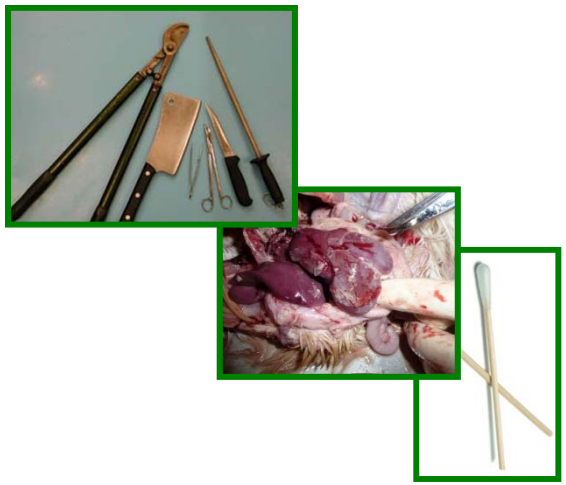
Pathology:

- Postmortem
- Histopathology
- Ancillary tests as required to complete the case
  - Bacterial culture from lesions
  - Virology
  - Parasitology

Pathological diagnoses, microbiological data, and questionnaire data are integrated for descriptive epidemiology

Pre-set bacterial tests:

- *Salmonella* spp. and *Campylobacter* spp, culture attempted from pooled caeca of each submission
- Typing for *Salmonella* spp.
- *Brachyspira* spp., PCR - pooled caeca
- *Mycoplasma*, PCR - tracheal swab

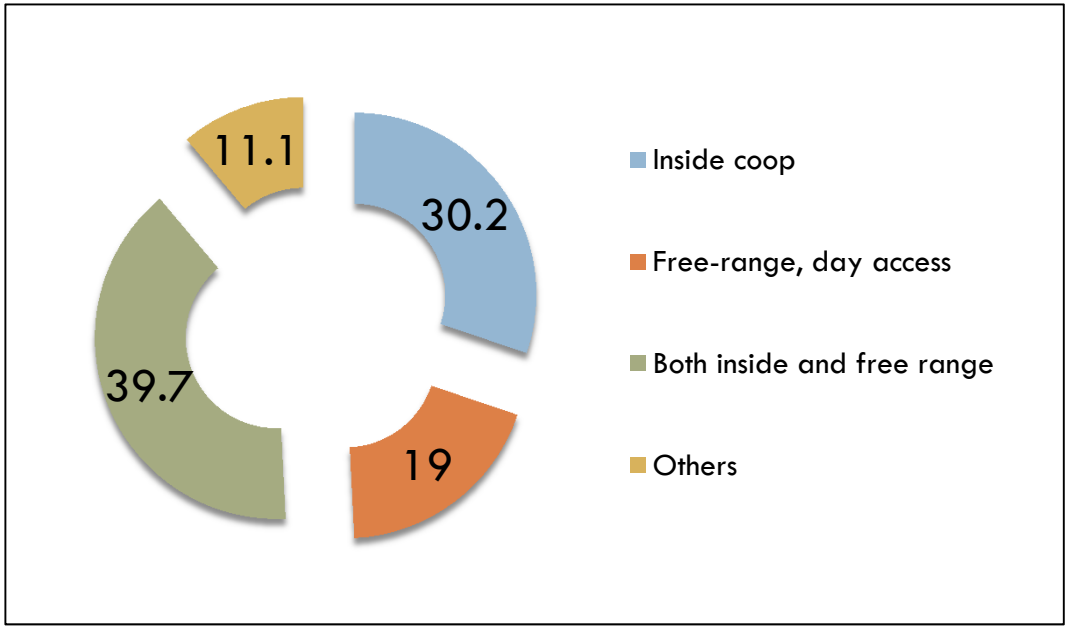


Results for Year 1 (Oct 1, 2015 – Sep 29, 2016)

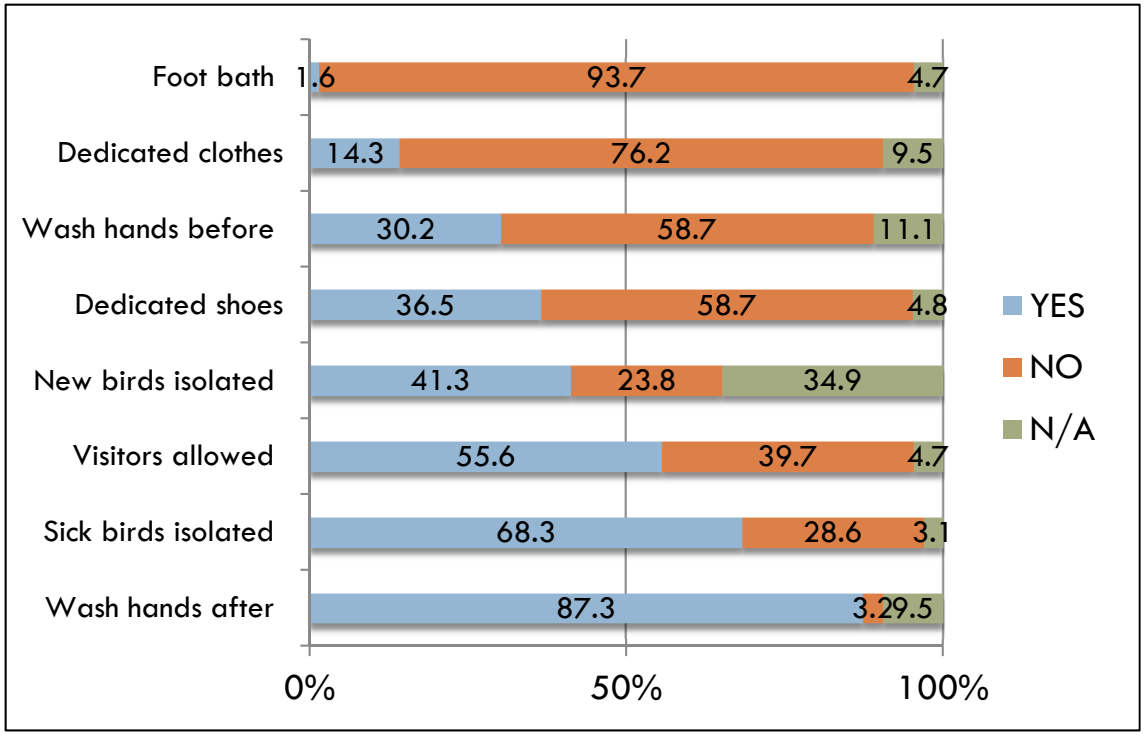
- Received 64 submissions:
  - 97 individual birds:
    - 80 chickens (55 submissions)
    - 9 turkeys (4 submissions)
    - 3 ducks (2 submissions)
    - 3 quail (1 submission)
    - 1 pheasant (1 submission)
    - 1 peafowl (1 submission)
- Submissions varied from 1 to 4 birds (single-bird submissions most common)
- For chickens, submission types were:
    - Layers, 36 birds
    - Dual, 15 birds
    - Broilers, 14 birds
    - Breeders, 6 birds
    - Pet/Hobby, 1 bird
    - Unspecified, 8 birds

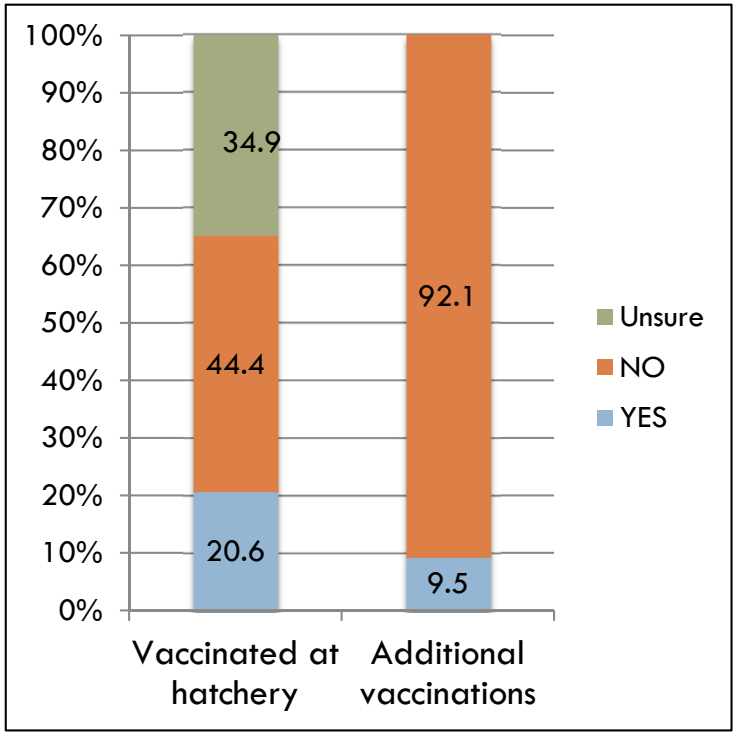
Results: Descriptive

- 63 questionnaires were received
- Most submissions were from south-west or eastern Ontario
- Most people raised birds for consumption (71%)
- Birds were purchased from hatcheries (41.3%), friends (22.2%), feed stores (16%), or came from other sources (40%)
- The average time birds were kept on the premise was 16.7 months



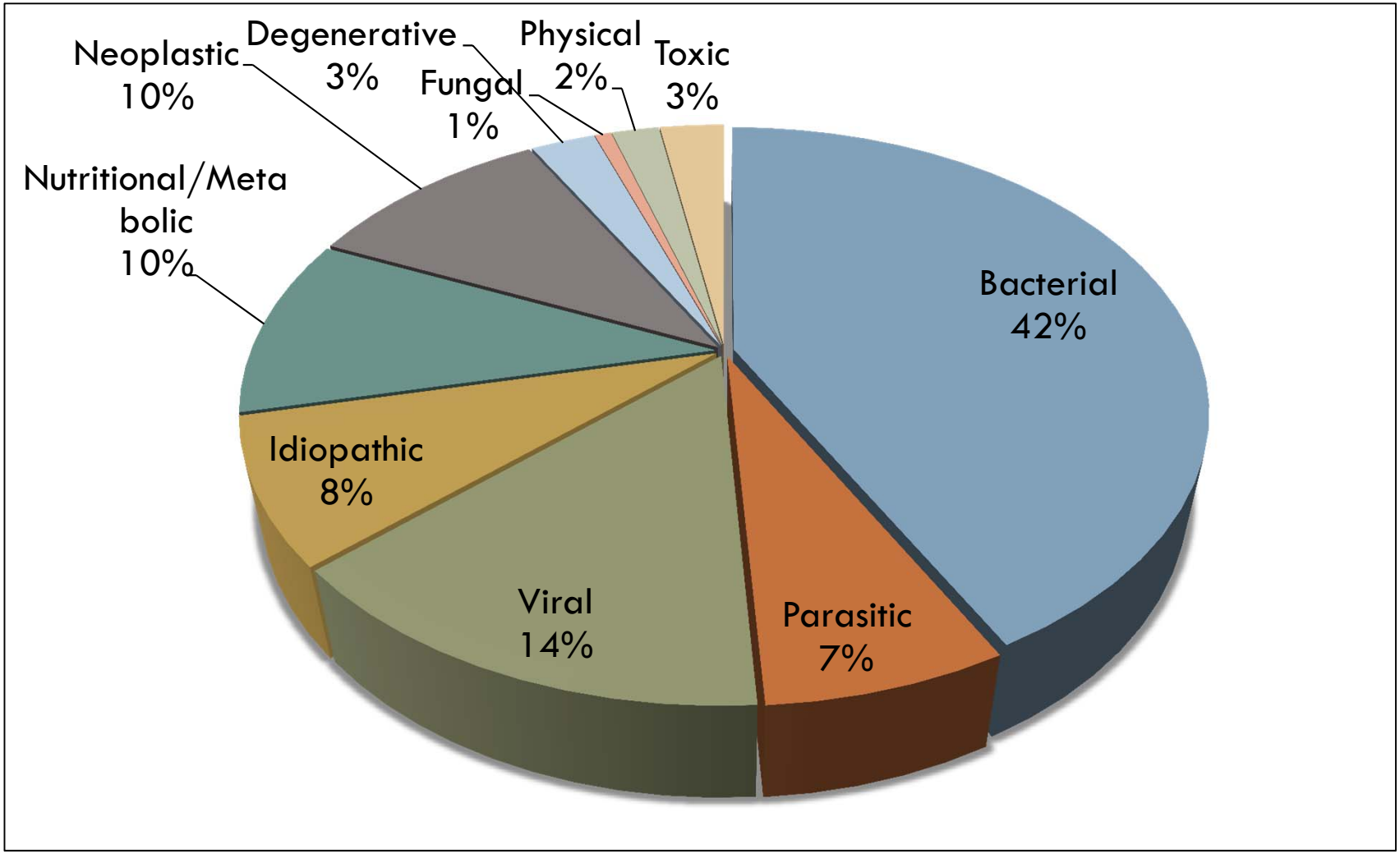
Results: Biosecurity





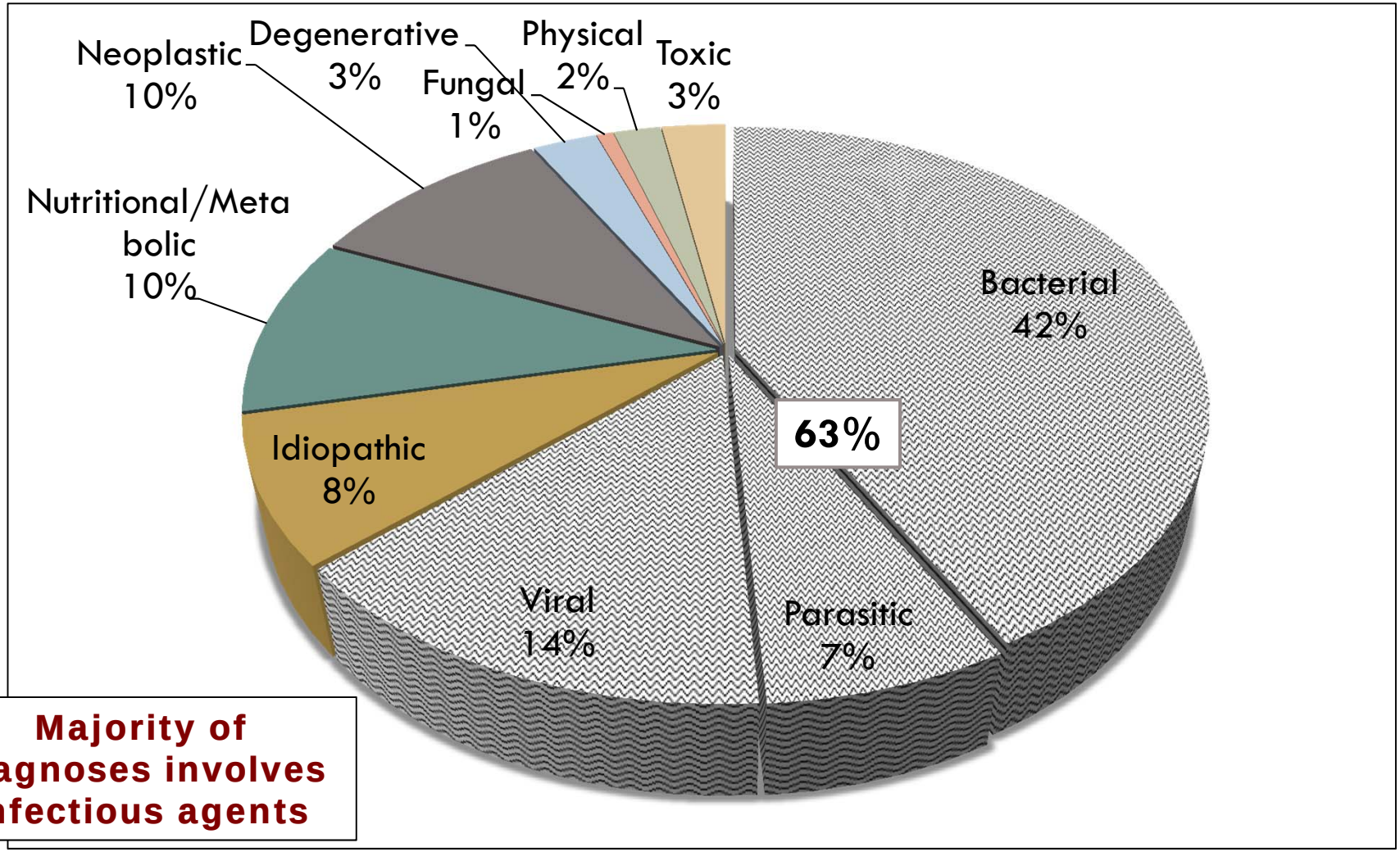
Results: Pathology

Etiological diagnoses for primary cause of death (*n* = 147)



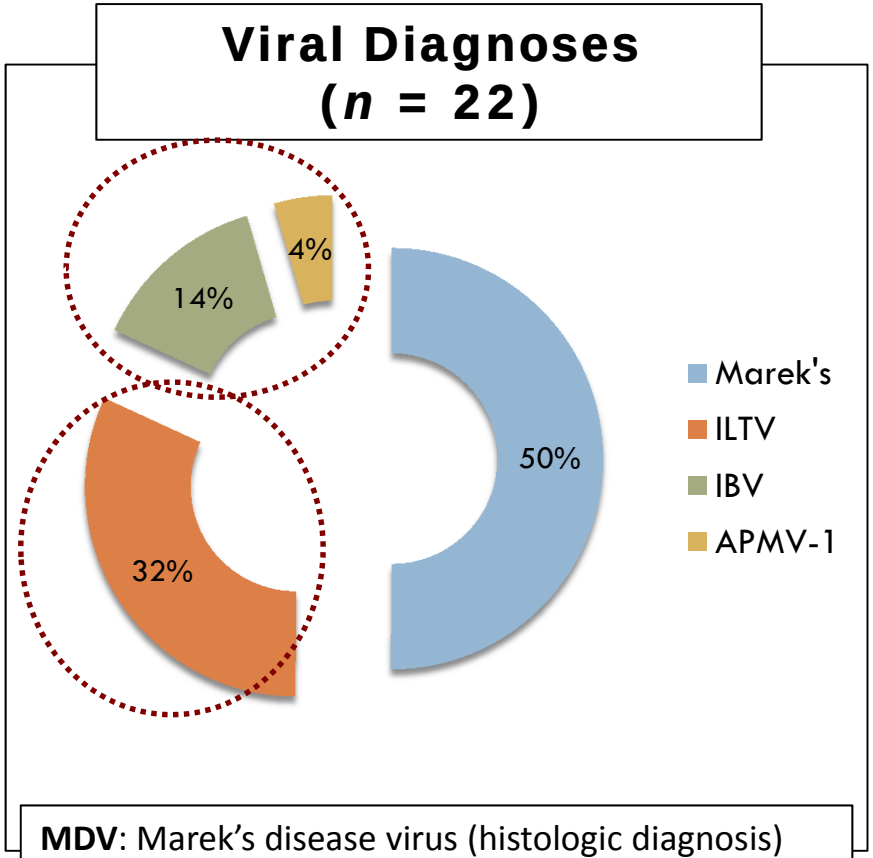
Results: Pathology cont'd.

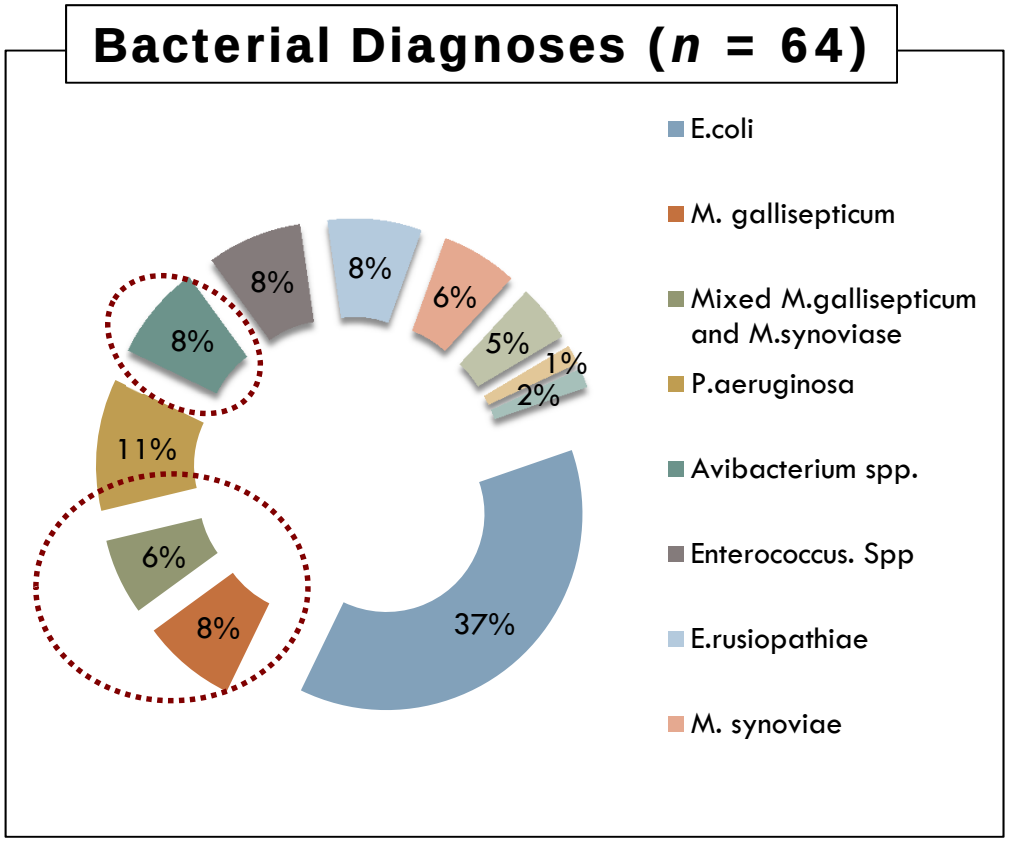
Etiological diagnoses for primary cause of death (*n* = 147)



Majority of diagnoses involves infectious agents

Results: Infectious agents associated with primary lesions

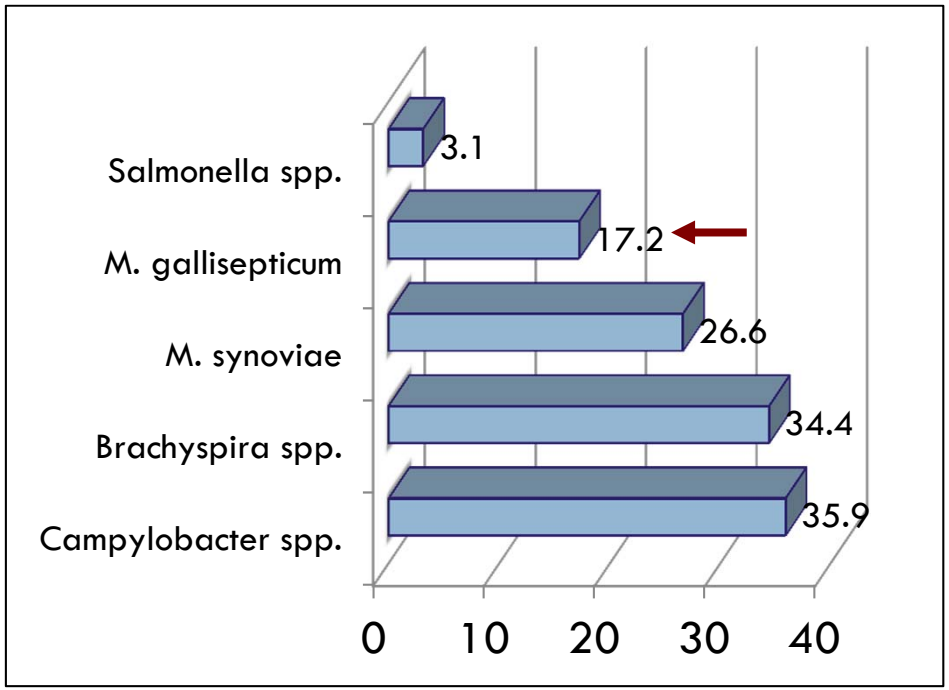


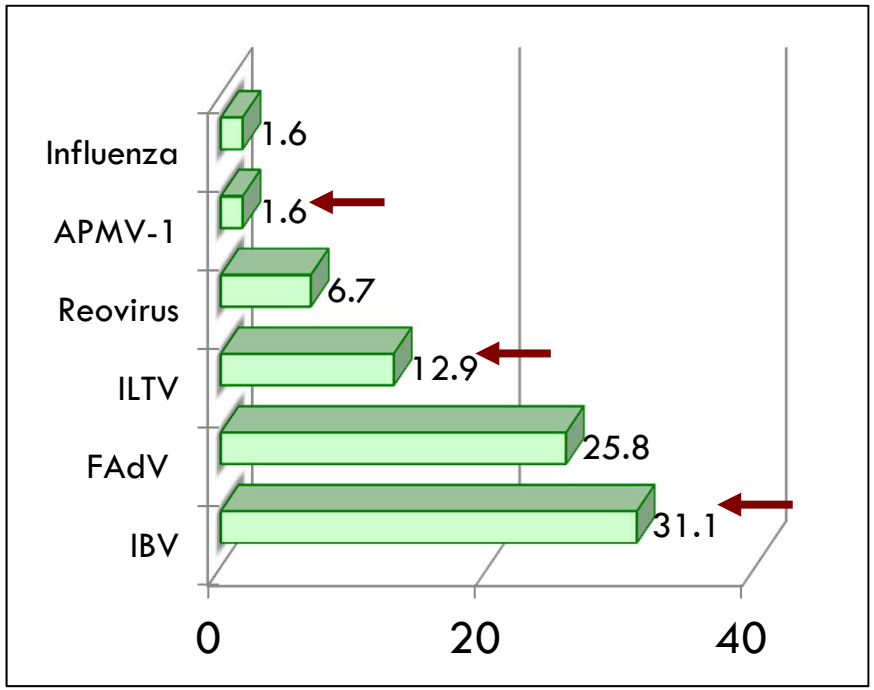


MDV: Marek's disease virus (histologic diagnosis)
ILTV: Infectious laryngotracheitis virus
IBV: Infectious bronchitis virus
APMV-1: Avian paramyxovirus serotype -1 (vaccine strain)

Results: Pre-set microbiology data (regardless of lesions)

Percentage (%) of etiological agents diagnosed/isolated over the total number of tests

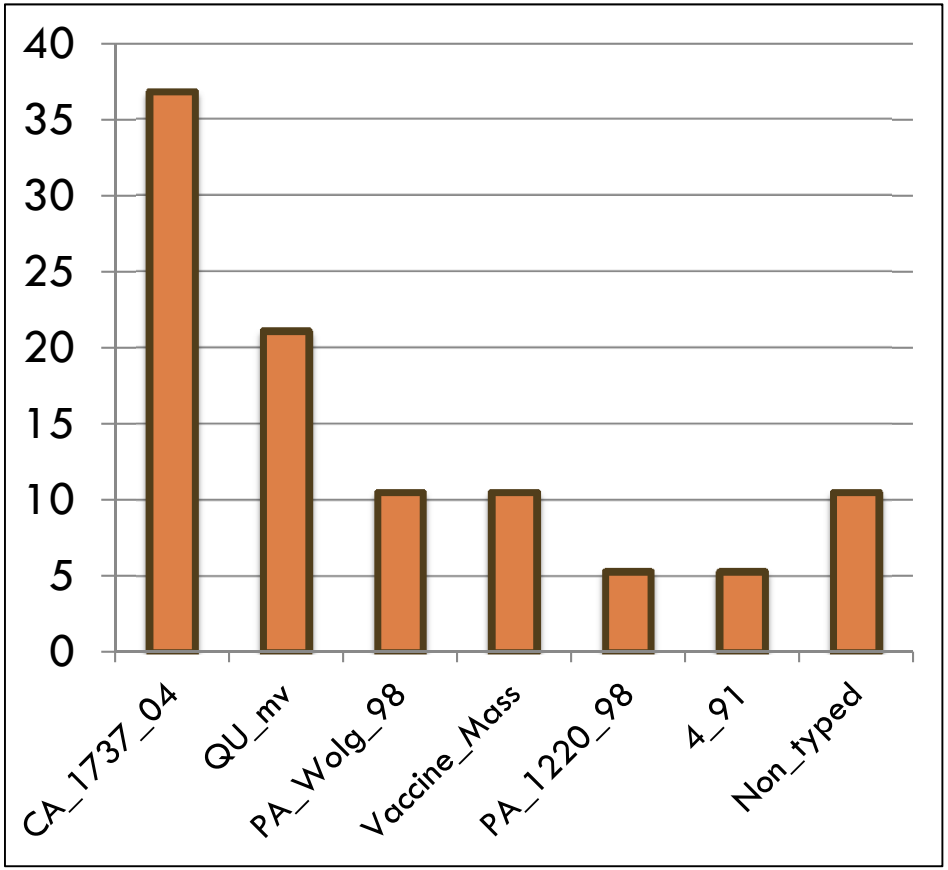




Results: ILTV and IBV

- 8 submissions (total 12 birds) were diagnosed with ILTV
  - 6/8 submissions had vaccine-like strains
  - 7/12 birds had histological lesions consistent with ILTV
- 19 submissions (total 30 birds) were diagnosed with IBV
  - 7 submission (12 birds) associated with lesions

Identity of IBV isolates (*n* = 18), based on phylogenesis (%)



Next steps…

- *Complete sampling and tests for the second year*
  - Sample submissions will be accepted until September 30, 2017

- *Complete analysis for*
  - Pathology / lesions
  - Microbiology
  - Questionnaire

http://www.guelphlabservices.com/AHL/Poultry_Flock_Disease.aspx
http://phrn.net/dis-surveillance-dr-susta-lab/

Contacts:
http://ovc.uoguelph.ca/pathobiology/faculty/leonardo-susta-0.

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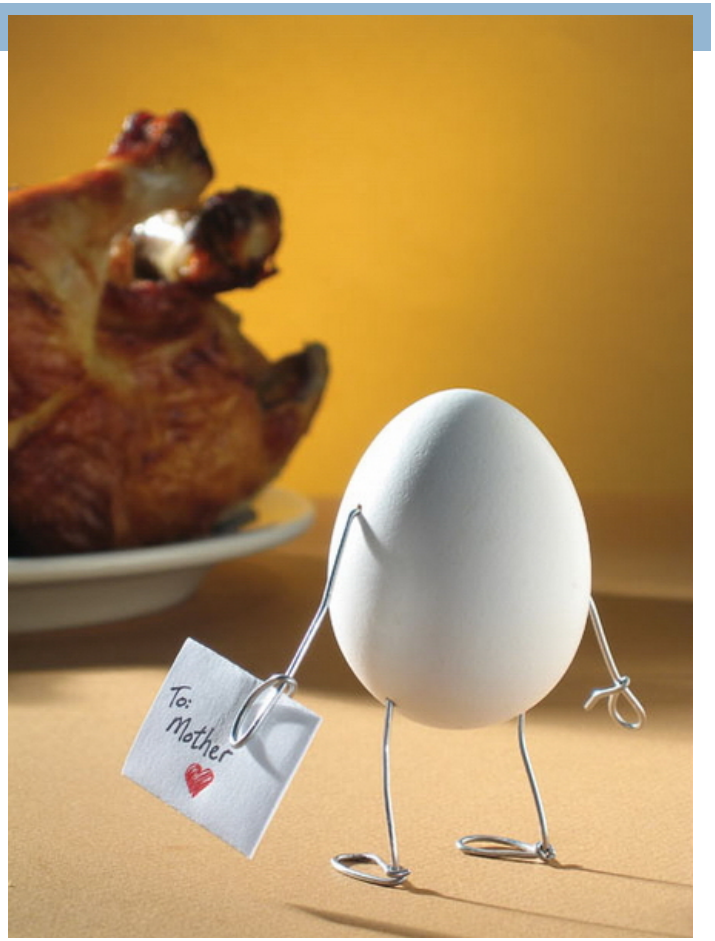
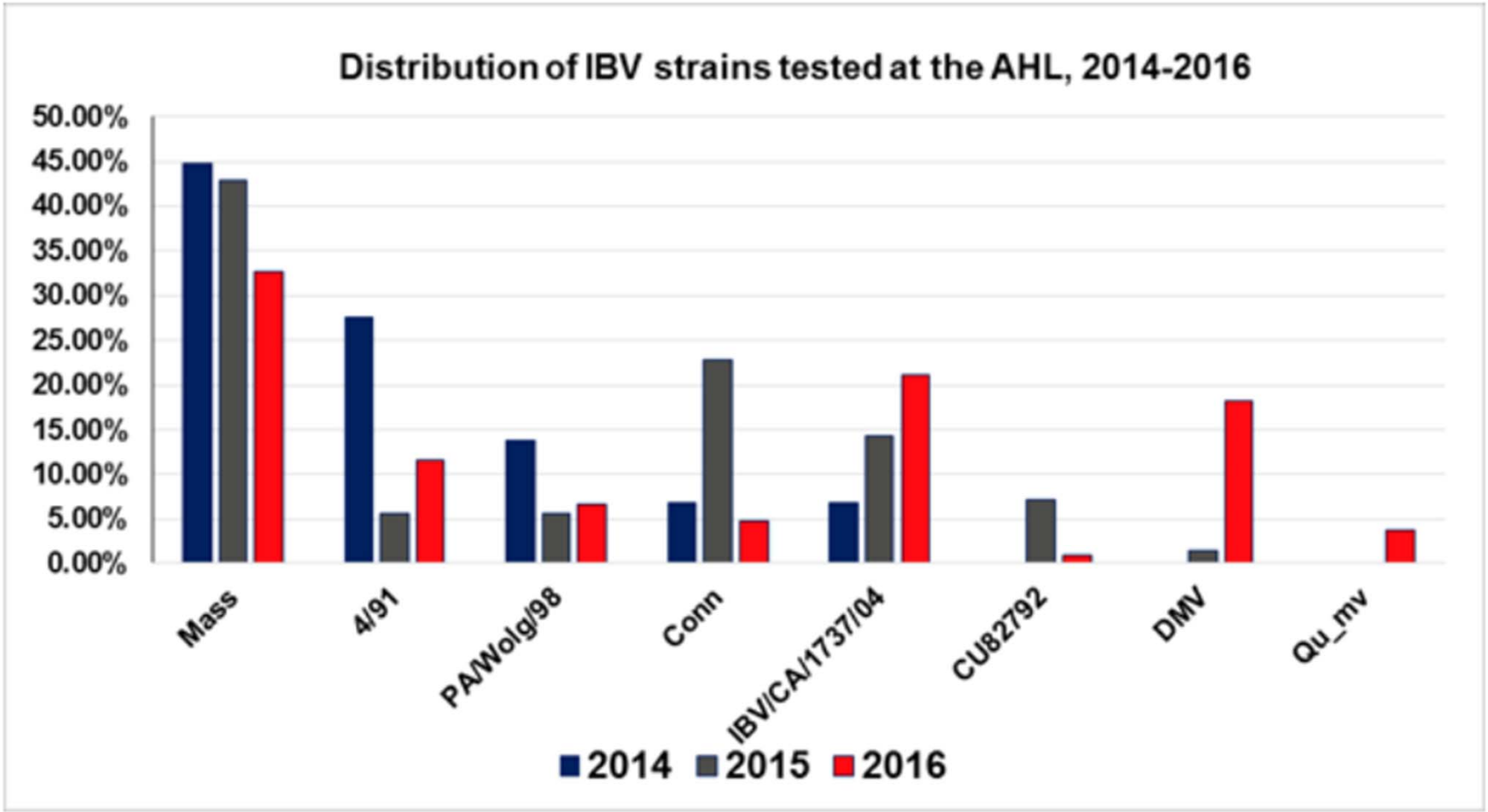
Thank you!





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