



Avian Mycoplasma

– Industry update

**NPIP General Conference Committee
Meeting**

June 13, 2019

Albuquerque, NM

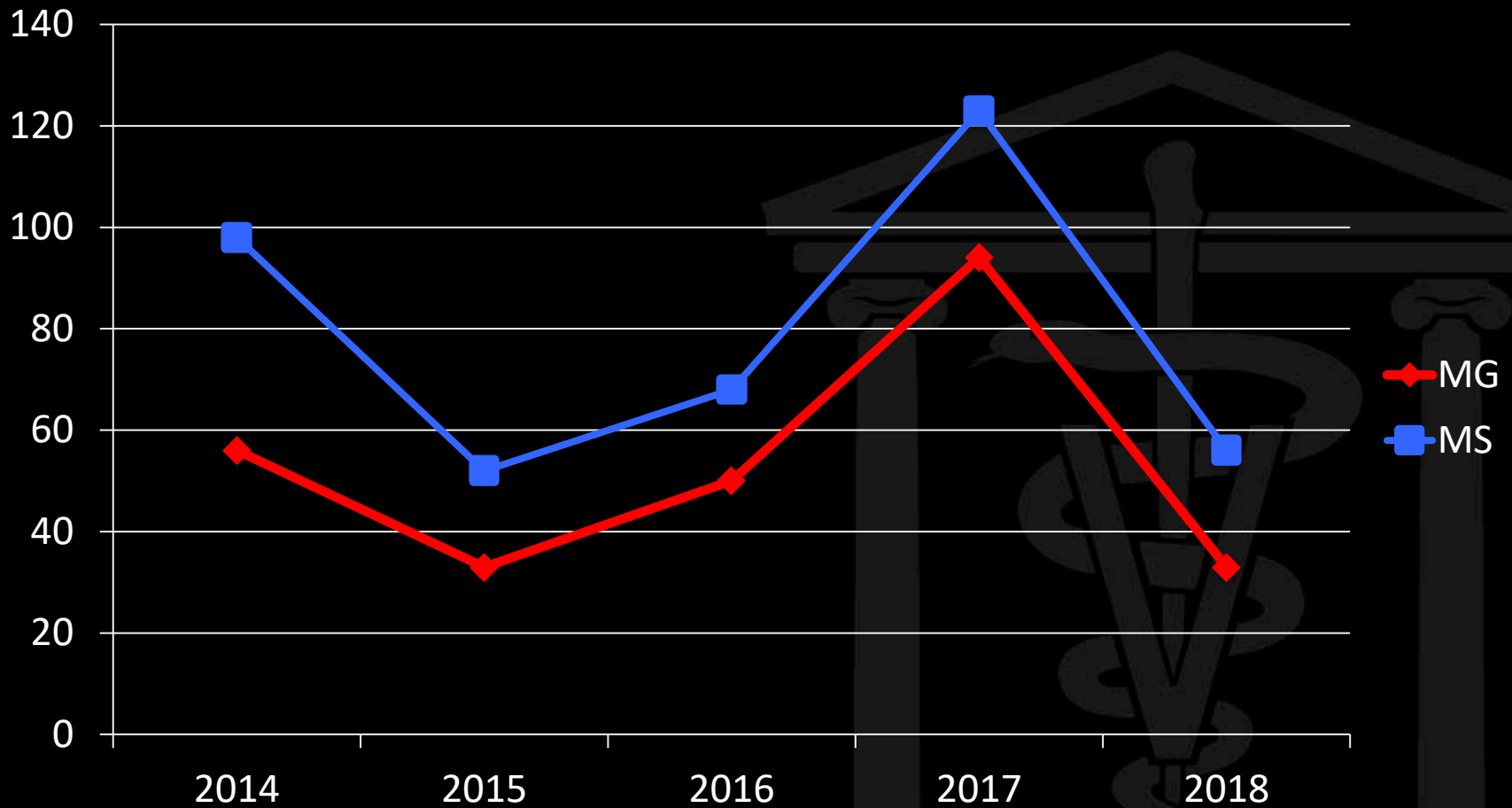
Naola Ferguson-Noel, DVM, MAM, PhD

Current Picture

- MG
 - Low prevalence
 - High significance
- MS
 - Higher prevalence
 - Lower significance



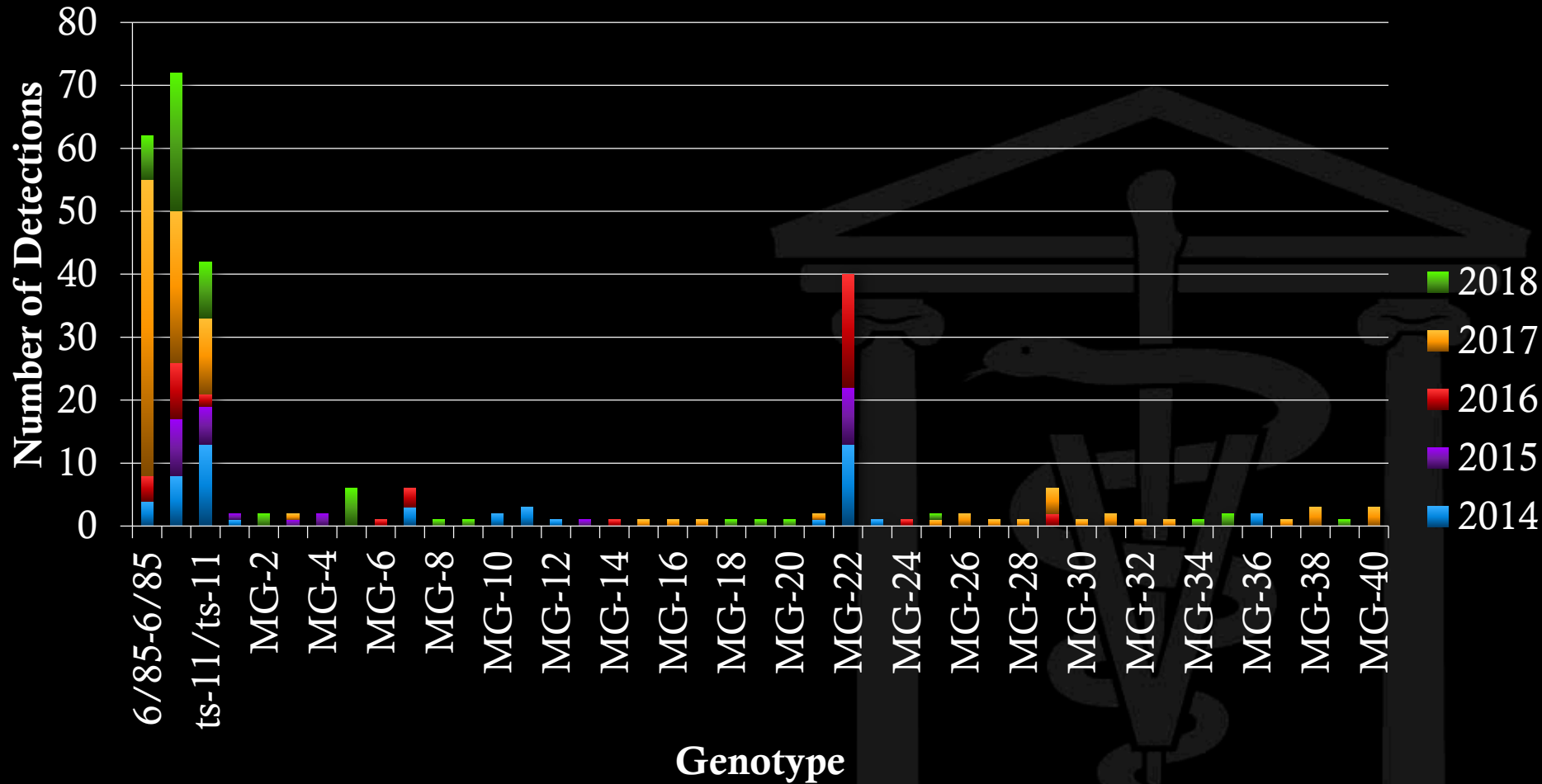
No. of positive submissions (no vaccinated flocks)



MG 2018



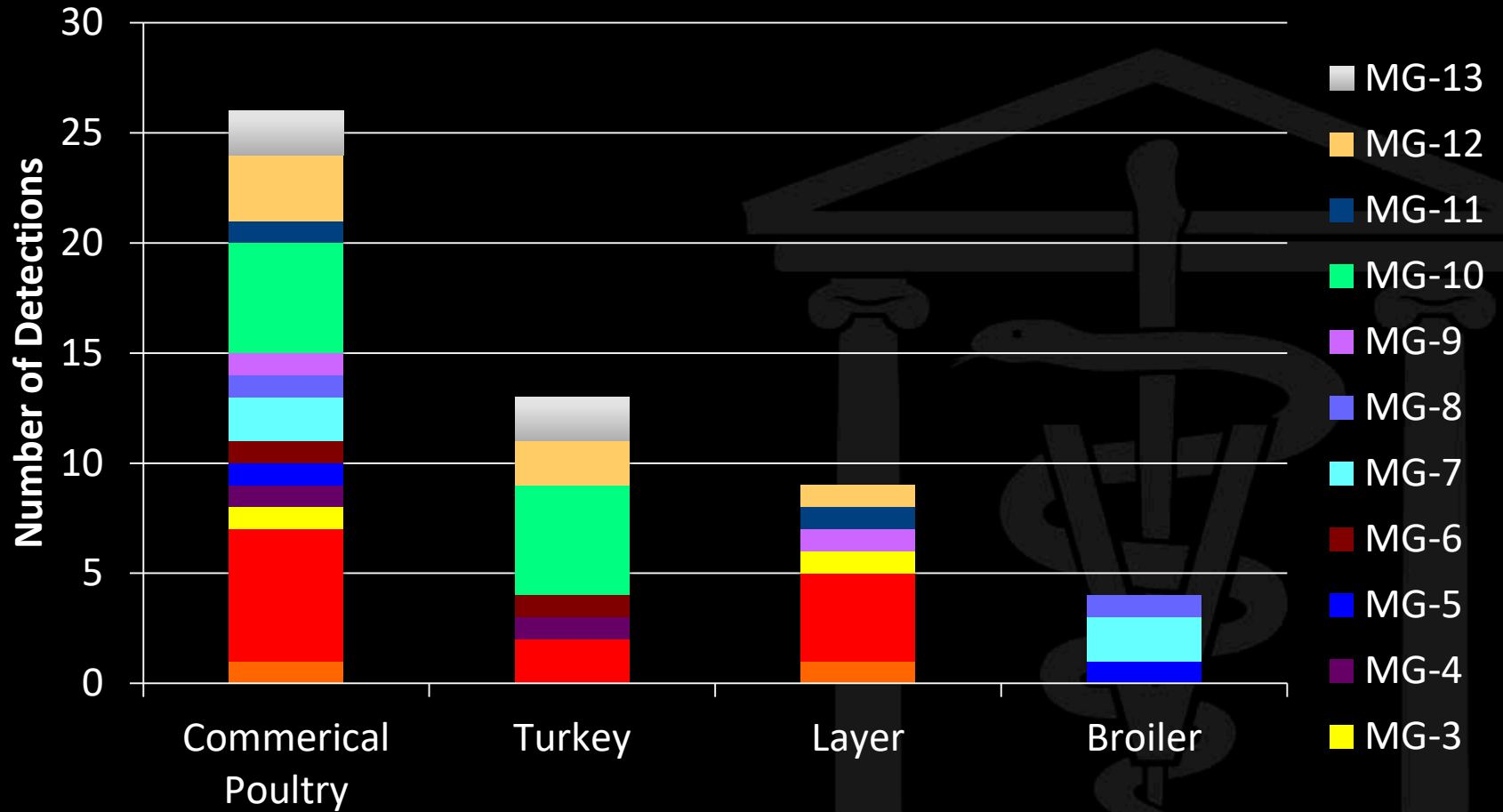
MG Types



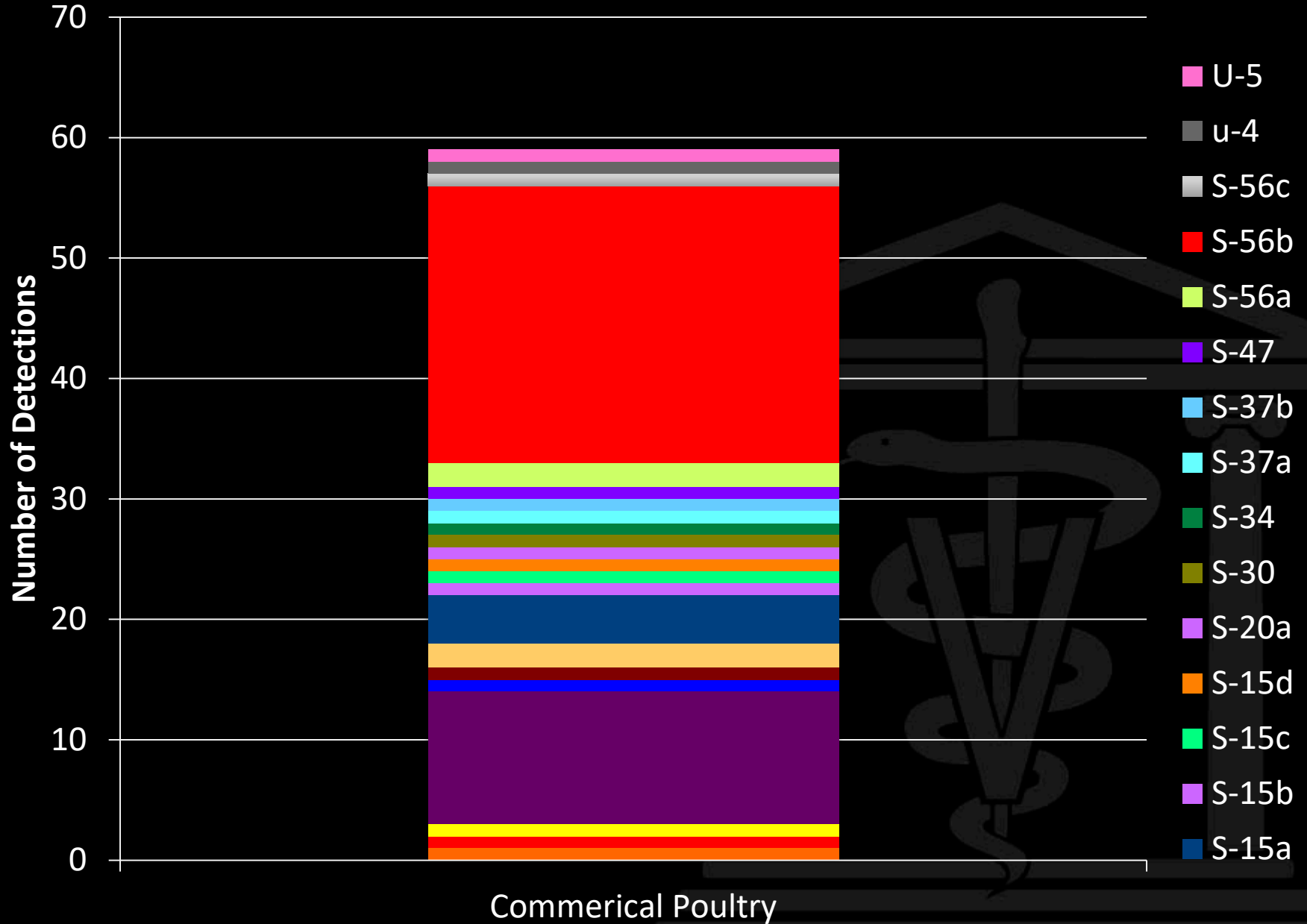
MG 2018



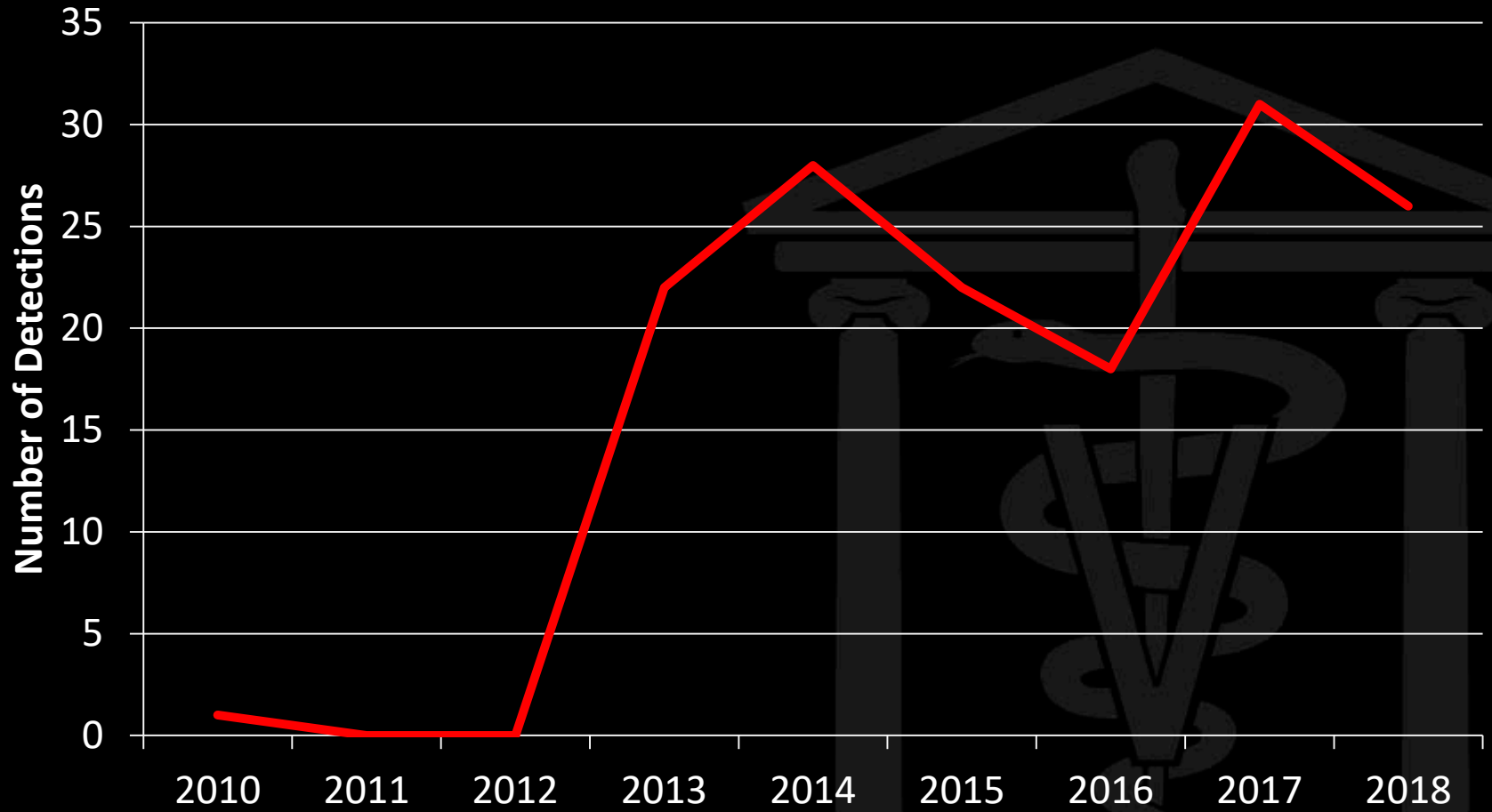
MG 2018



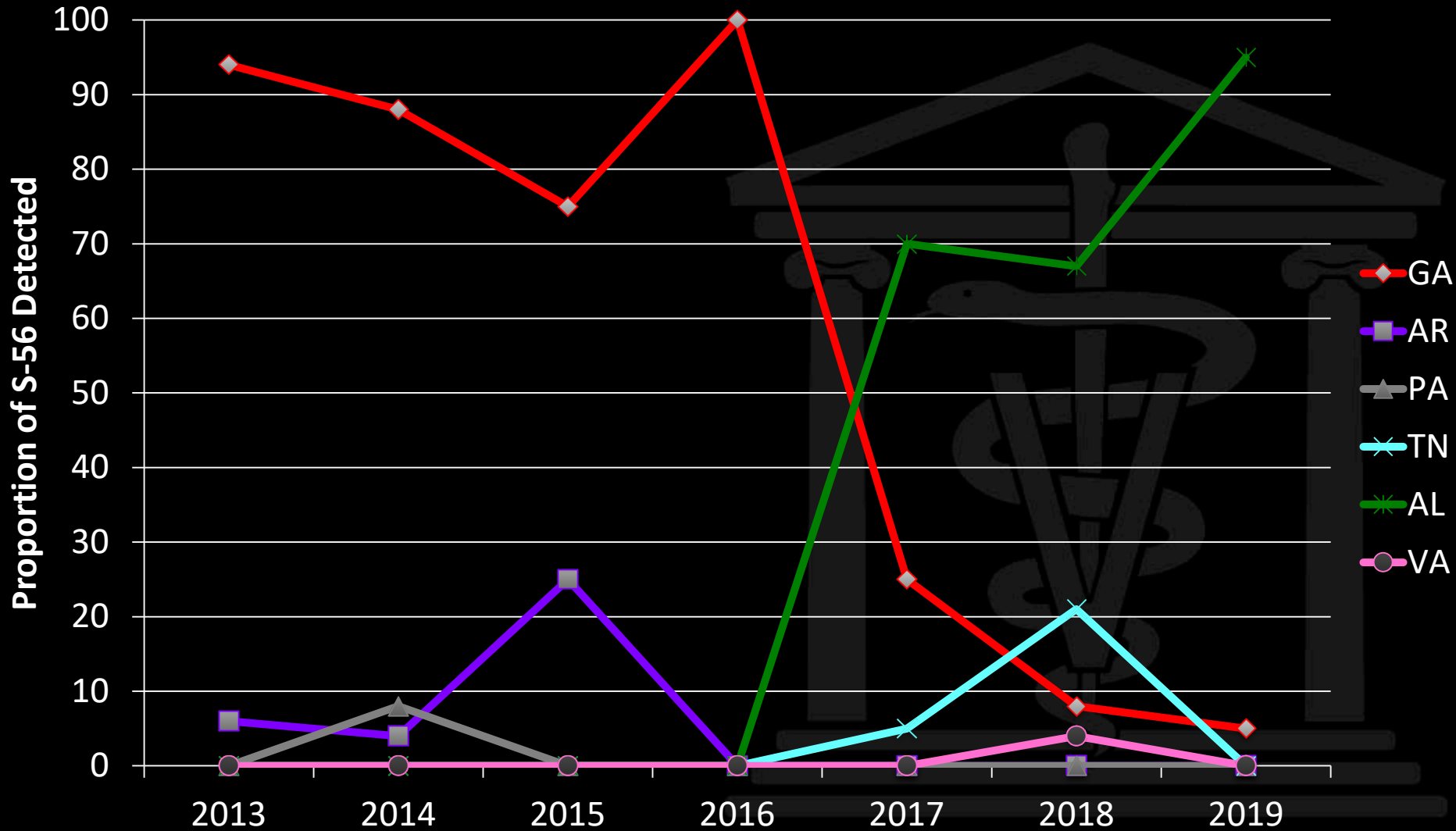
MS 2018



MS – S-56



S-56 by State

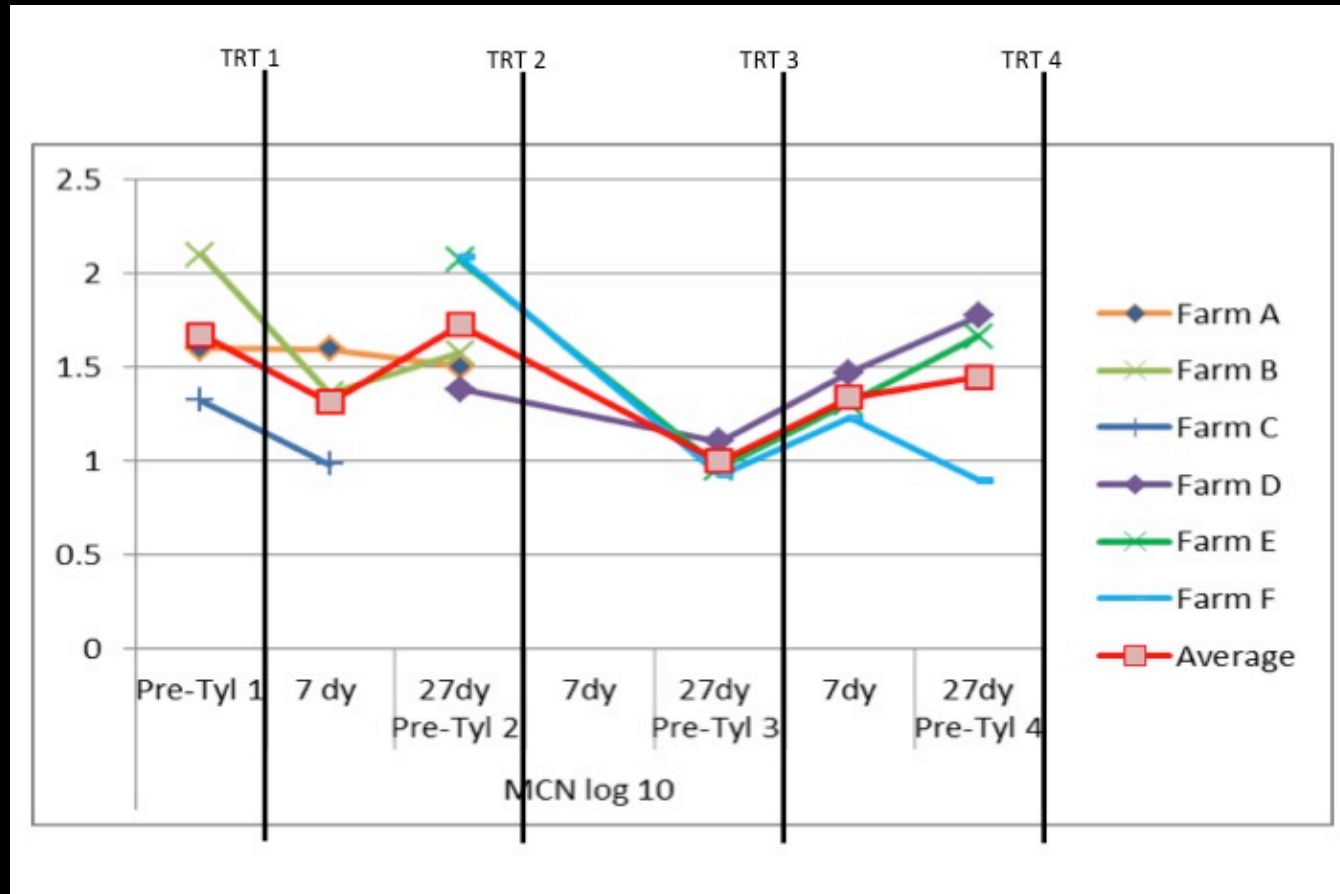


MS Control Options

- Eliminate Flock?
- Quarantine/Isolate
- Treatment
- Vaccine?



Tylosin Treatments Less Effective Over Time



Genotype	Date Isolated	Company	MIC			
			MIC tylosin (µg/mL)	Sensitivity to tylosin	MIC tetracycline (µg/mL)	Sensitivity to tetracycline
S-56	Jun-12	1	1	S	0.5	S
S-56	Jun-12	1	1	S	0.5	S
S-48	Feb-13	2	0.0625	S	0.5	S
S-56	May-14	5	2	I	0.25	S
S-56	May-14	5	1	S	0.5	S
S-56	May-14	5	1	S	0.5	S
S-56	Jun-14	5	1	S	0.25	S
S-56	Jun-14	4	1	S	0.5	S
S-56	Jun-14	3	1	S	0.5	S
S-56	Jun-14	3	1	S	0.5	S
S-56	Jun-14	5	1	S	0.25	S
S-56	Jun-14	5	4	R	0.375	S
S-56	Jun-14	5	1	S	0.5	S
S-56	Oct-14	5	1	S	0.25	S
S-56	Feb-15	2 (Farm A)	2	I	1	S
S-56	Feb-15	2 (Farm B)	1	S	1	S
S-56	Feb-15	2 (Farm C)	1	S	1	S
S-56	Mar-15	2 (Farm D)	2	I	1.5	S
S-56	Mar-15	2 (Farm E)	4	R	2	S
S-56	Mar-15	2 (Farm F)	2	I	1.5	S
			S ≤ 1 / I = 2 / R > 4		S ≤ 4 / I = 8 / R > 16	

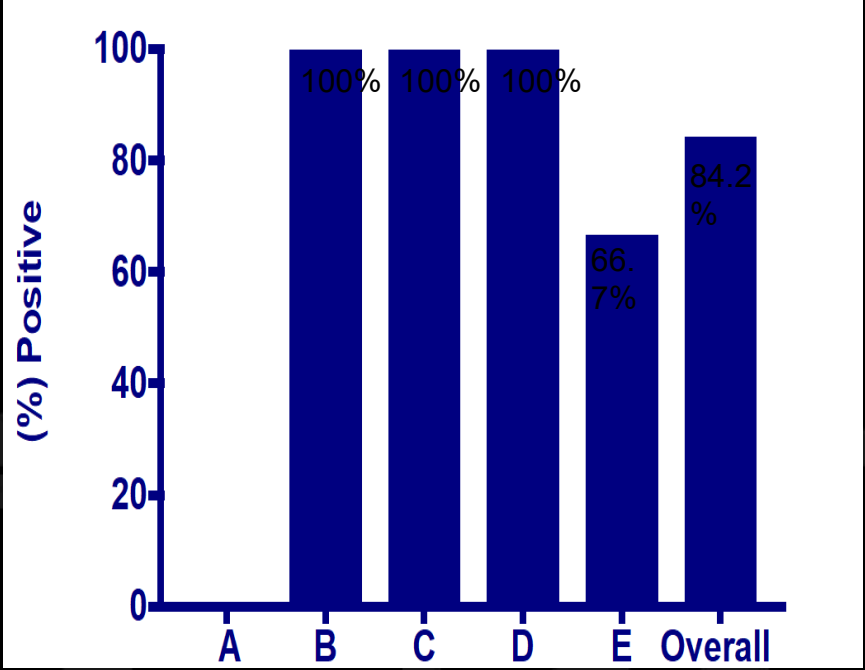
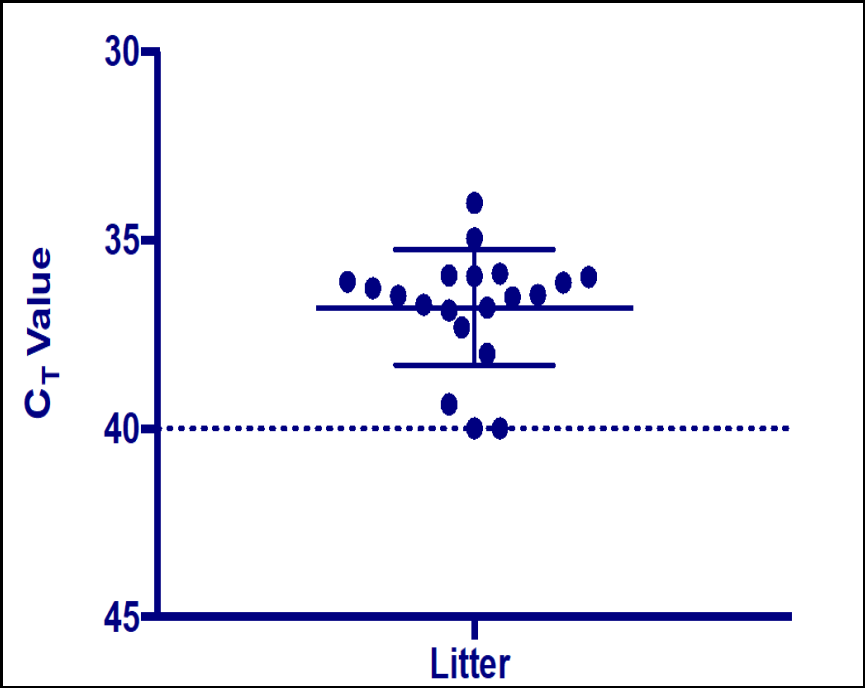
Mycoplasma synoviae Antimicrobial Susceptibility Testing

- 23srRNA PCR and sequencing



Investigation of Environmental Fomites and Their Role in the Transmission of *Mycoplasma Synoviae*

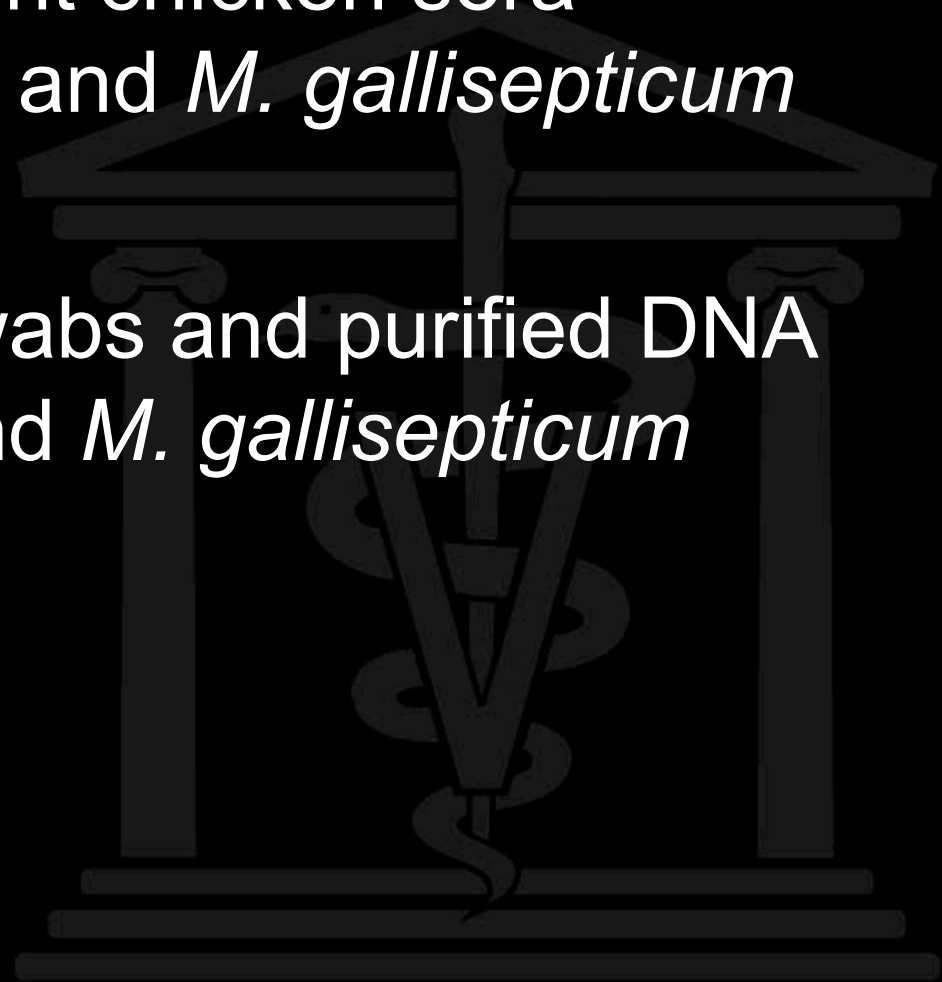
Brandon T. Armwood, DVM
2018 MAM Candidate
Date



Results: Litter PCR

Check Tests

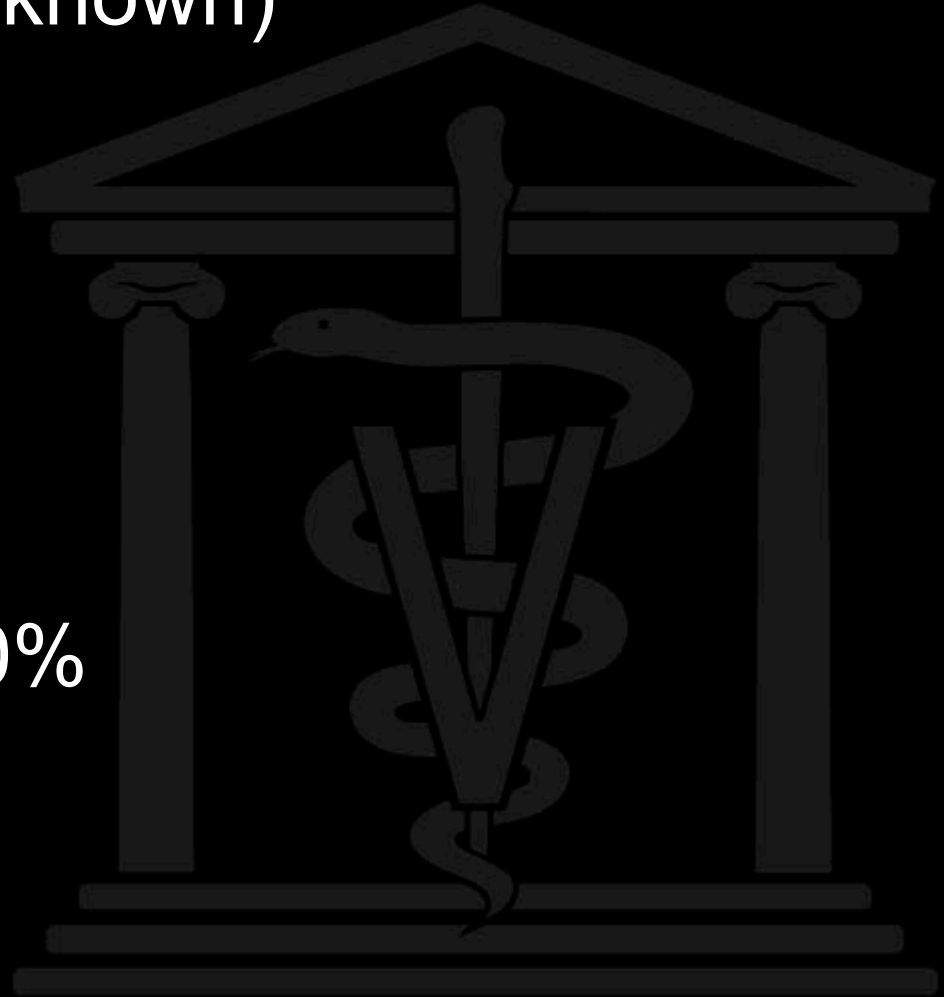
- Panel of convalescent chicken sera against *M. synoviae* and *M. gallisepticum*
- Panel of tracheal swabs and purified DNA from *M. synoviae* and *M. gallisepticum* infected chickens



Antisera Check Tests

- 92 kits (63 blind, 29 known)
 - 10 MG+
 - 10 MS+
 - 10 negative

- Pass = Score of >80%



Antisera Check Tests Results

Avian Mycoplasma PDRC Check Test 2018 Results

Lab Name:
Invoice No.

SEROLOGY (Known Kit): **PASS** Score = 94 %

SPA – Charles River MS, MG (Scores = 100%)

ELISA – IDEXX MG, MS (MG Score = 87%; MS Score = 90%)

SEROLOGY (Blind Kit): **PASS** Score = 91%

SPA – MS, MG (Scores = 100%)

ELISA – MS, MG (**MG Score = 80%**; MS Score = 83%)

Comments:

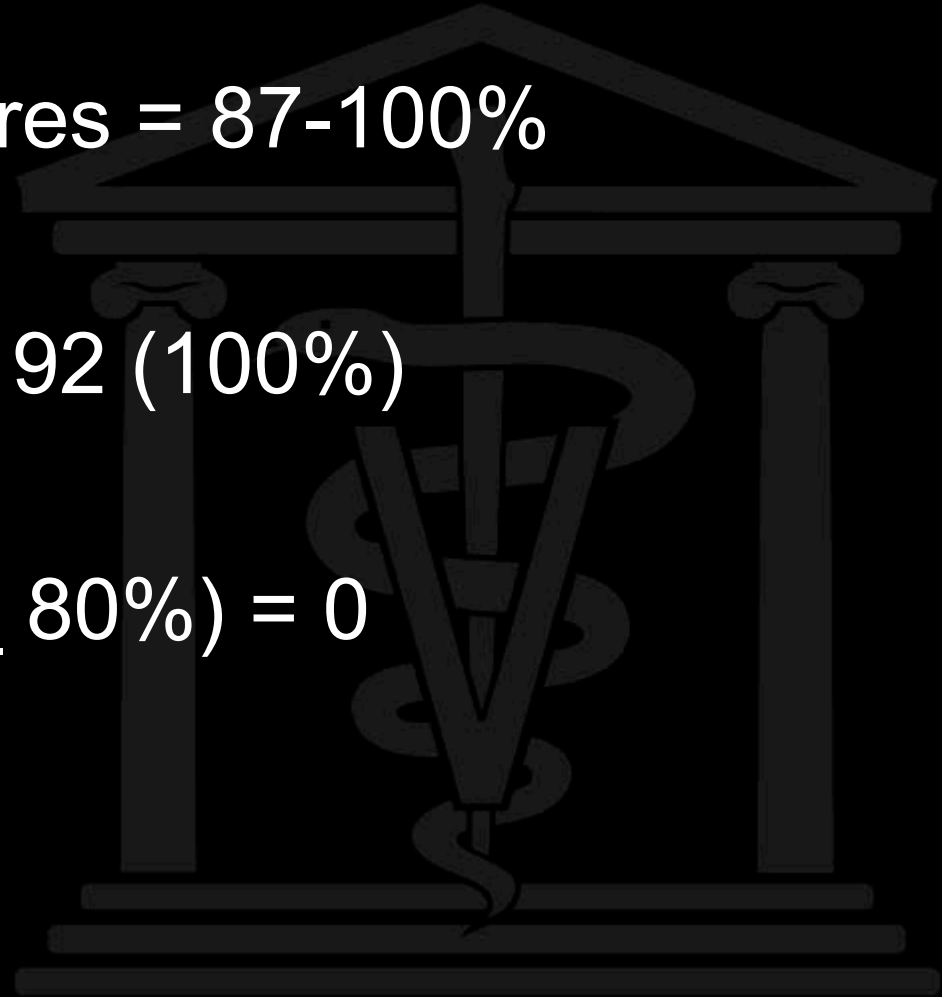
- Several false positives on ELISA tests on both known and blind kits
- False positive on MG ELISA: known samples N10, MS2, MS5, MS10; and blind samples B6, B9, B16, B21 & B24
- False positive on MS ELISA: known samples MG1, MG7, MG8; and blind samples B11, B12, B13, B27, B28 & B29

Antisera Check Tests Results

Range of Scores = 87-100%

PASS = 92 (100%)

FAIL ($\leq 80\%$) = 0



PCR Check Tests

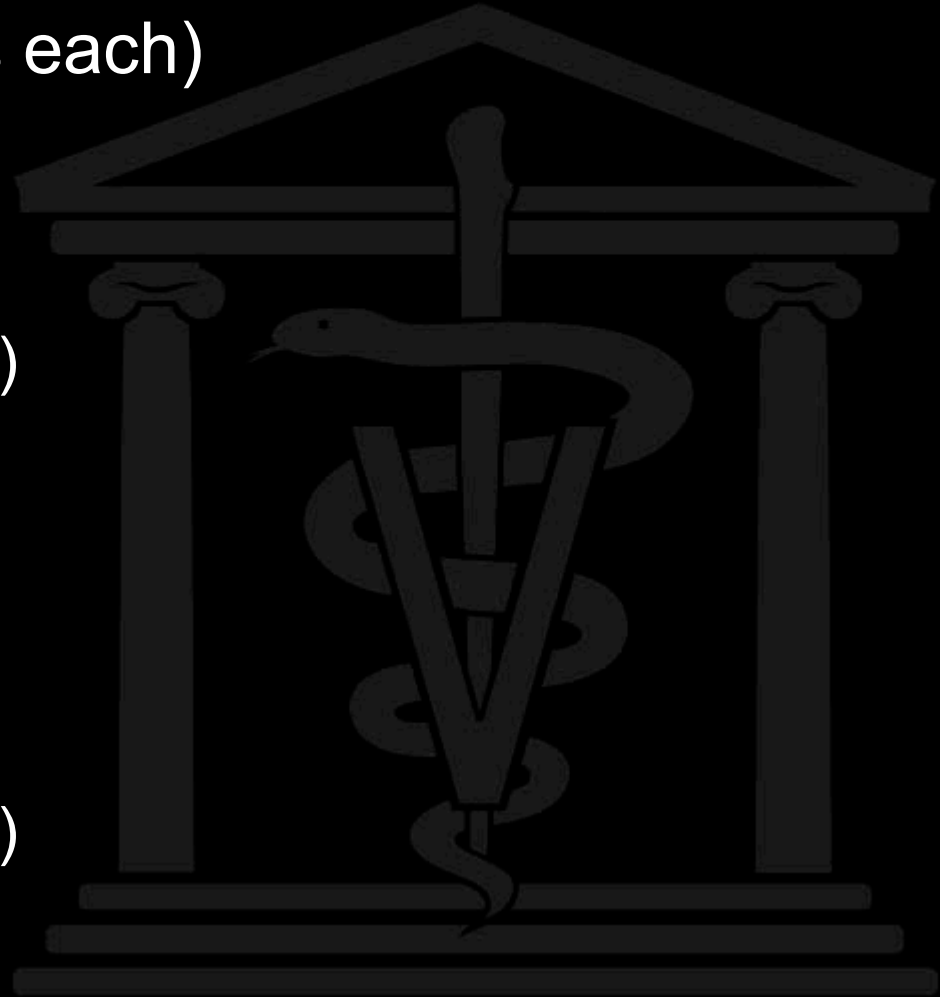
- 31 Kits
 - 46 “Blind”
 - 25 “Known”

- Pass = Score of $>80\%$



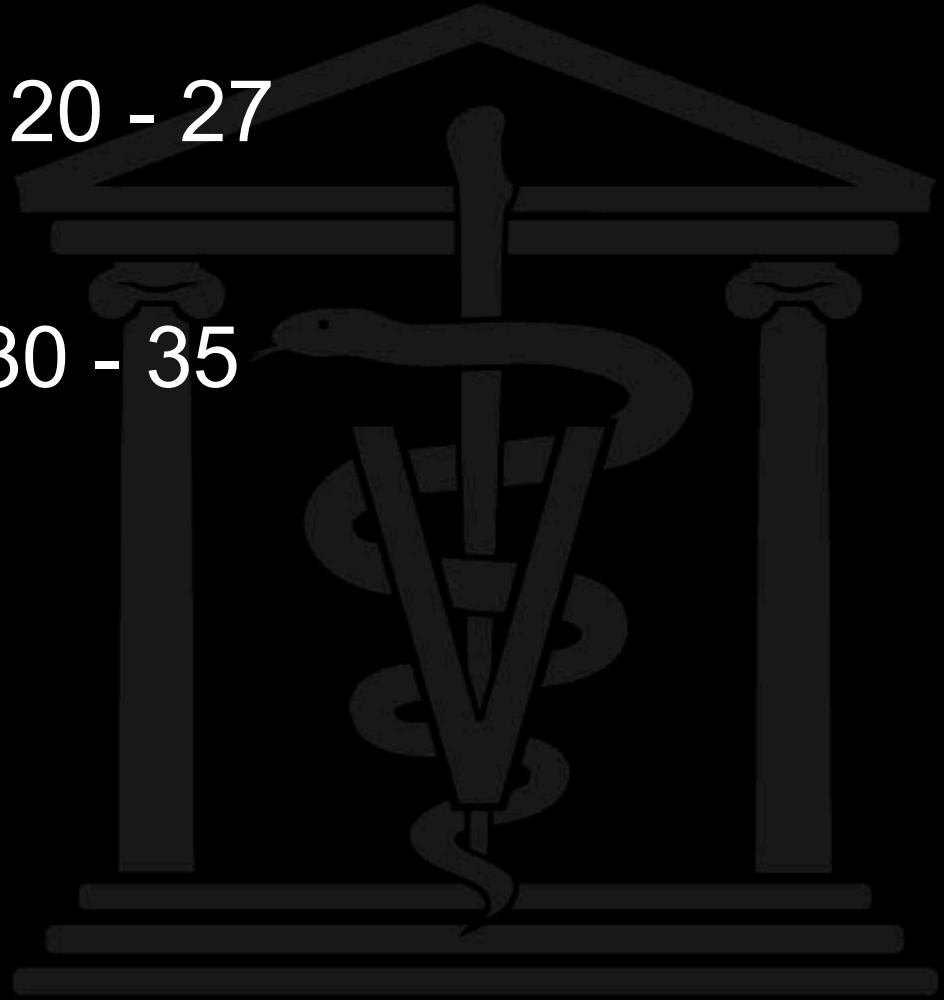
PCR Check Tests

- 5 swabs pools (5 swabs each)
 - 1 negative
 - 1 MG+
 - 1 MS+
 - 1 MG and MS+ (1 weak)
- 5 DNA samples
 - 1 negative
 - 1 MG+
 - 1 MS+
 - 1 MG and MS+ (1 weak)



PCR Check Tests

- Strong positive Ct = 20 - 27
- Weak positive Ct = 30 - 35



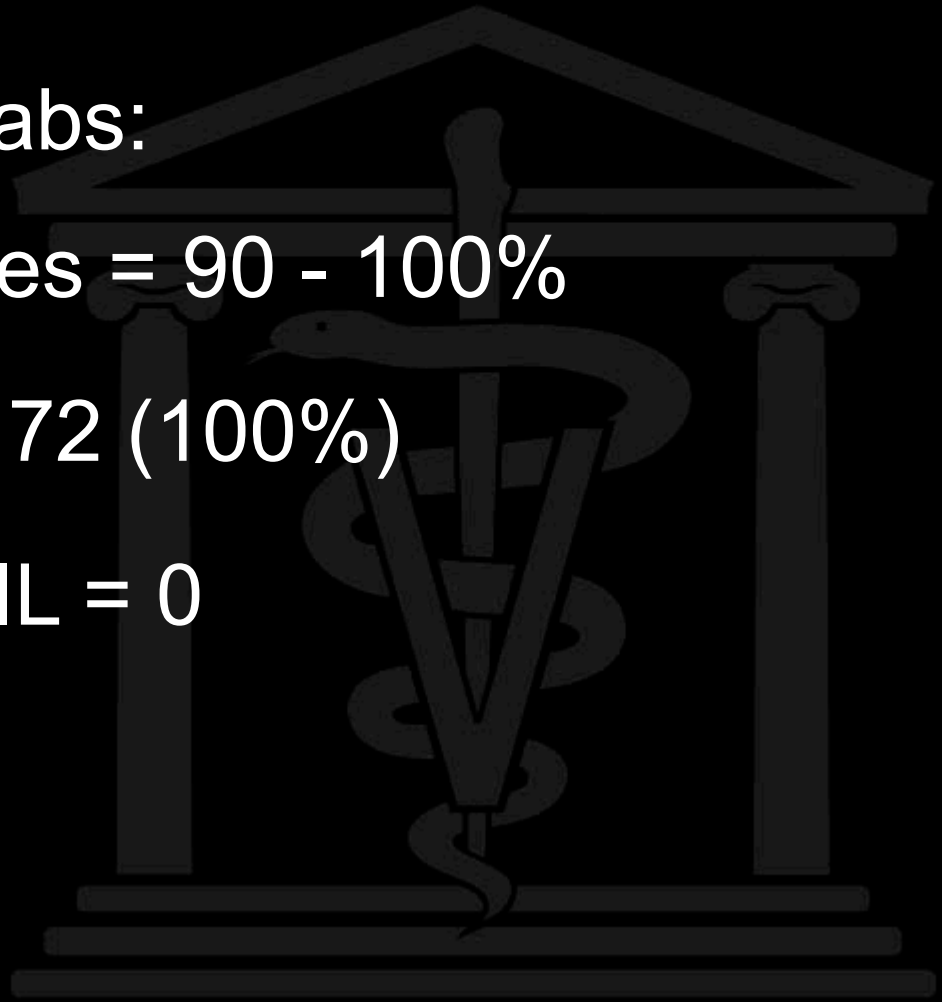
PCR Check Tests Results

Swabs:

Range of Scores = 90 - 100%

PASS = 72 (100%)

FAIL = 0



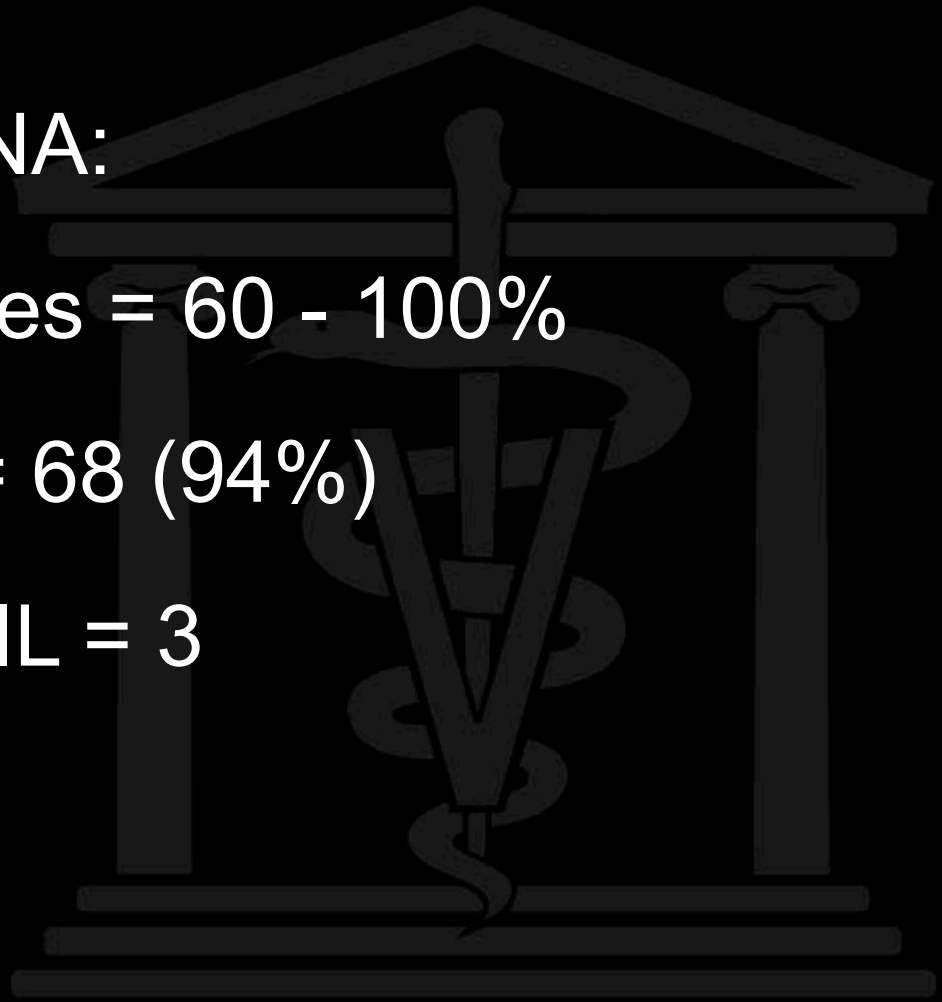
PCR Check Tests Results

DNA:

Range of Scores = 60 - 100%

PASS = 68 (94%)

FAIL = 3



PCR Check Test Results

Blind/Known Panel	Expected Results		% Participants with correct results (Mean Ct)	
	MG	MS	MG	MS
Swab label				
18-01/18-06	Positive	Positive	100% (29.2)	100% (31.2)
18-02/18-07	Positive	Negative	100% (28.8)	100% (-)
18-03/18-08	Negative	Negative	100% (-)	100% (-)
18-04/18-09	Negative	Positive	100% (-)	100% (30.5)
18-05/18-10	Negative	Positive	100% (-)	100% (34.2)
DNA tube				
18-01/18-06	Positive	Positive	99% (32.3)	99% (32.6)
18-02/18-07	Positive	Negative	100% (26.8)	100% (-)
18-03/18-08	Negative	Negative	100% (-)	100% (-)
18-04/18-09	Negative	Positive	99% (-)	96% (26.8)
18-05/18-10	Negative	Positive	100% (-)	93% (29.8)

Thank you

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