Avian Mycoplasma
– an update

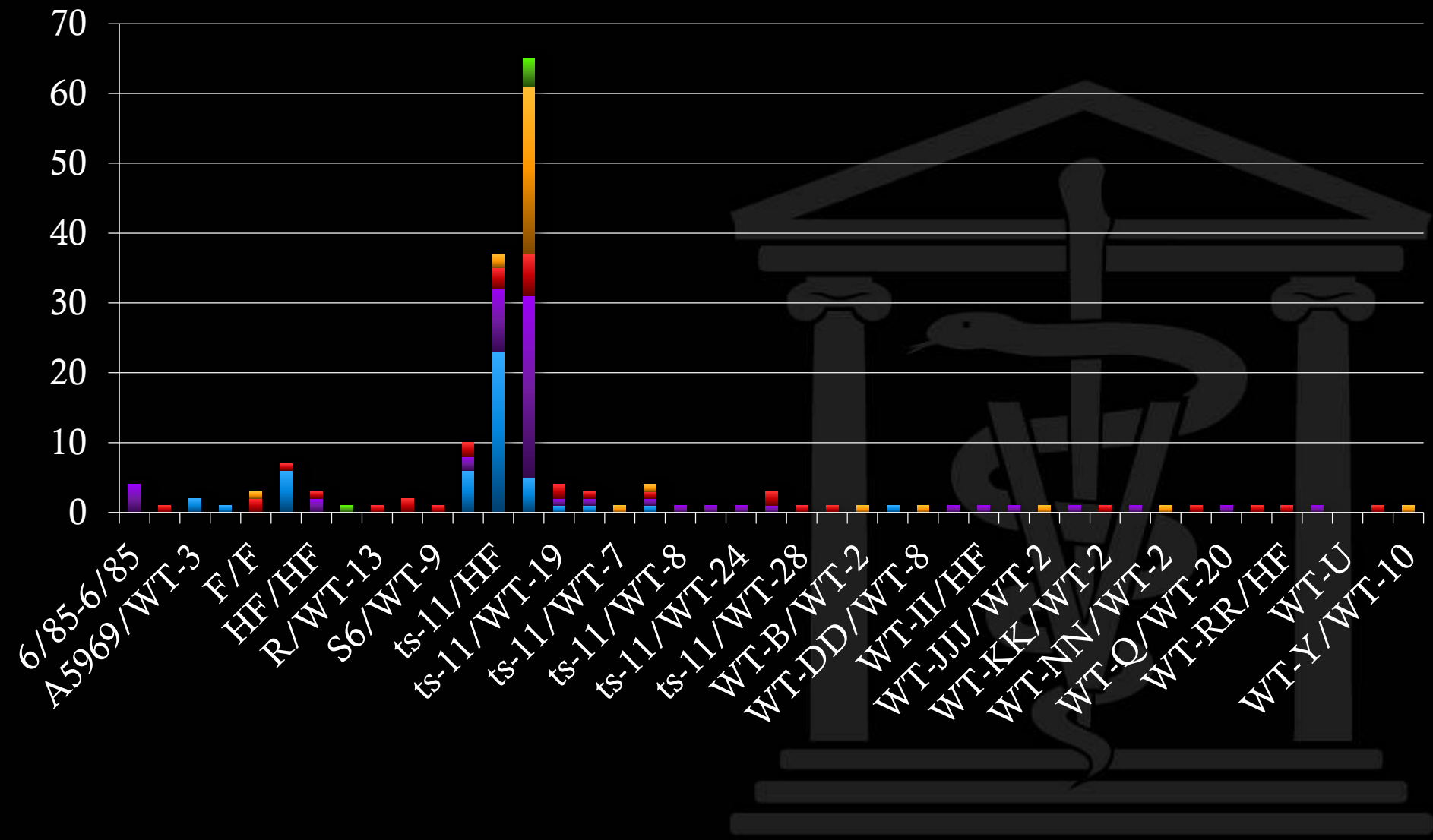
NPIP 44th Biennial Conference
June 26-28, 2018
Franklin, TN

Naola Ferguson-Noel, DVM, MAM, PhD

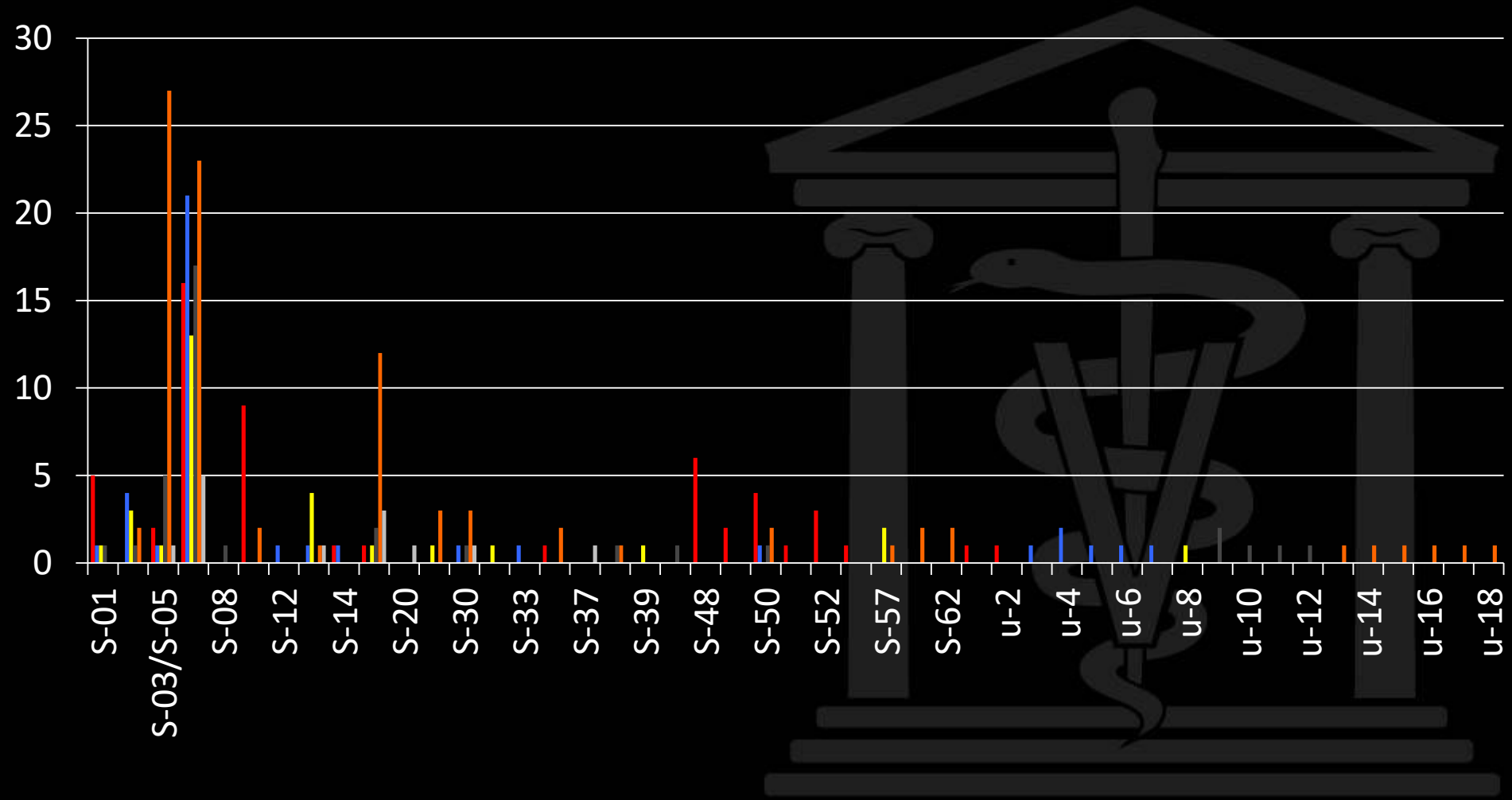
Current Picture

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

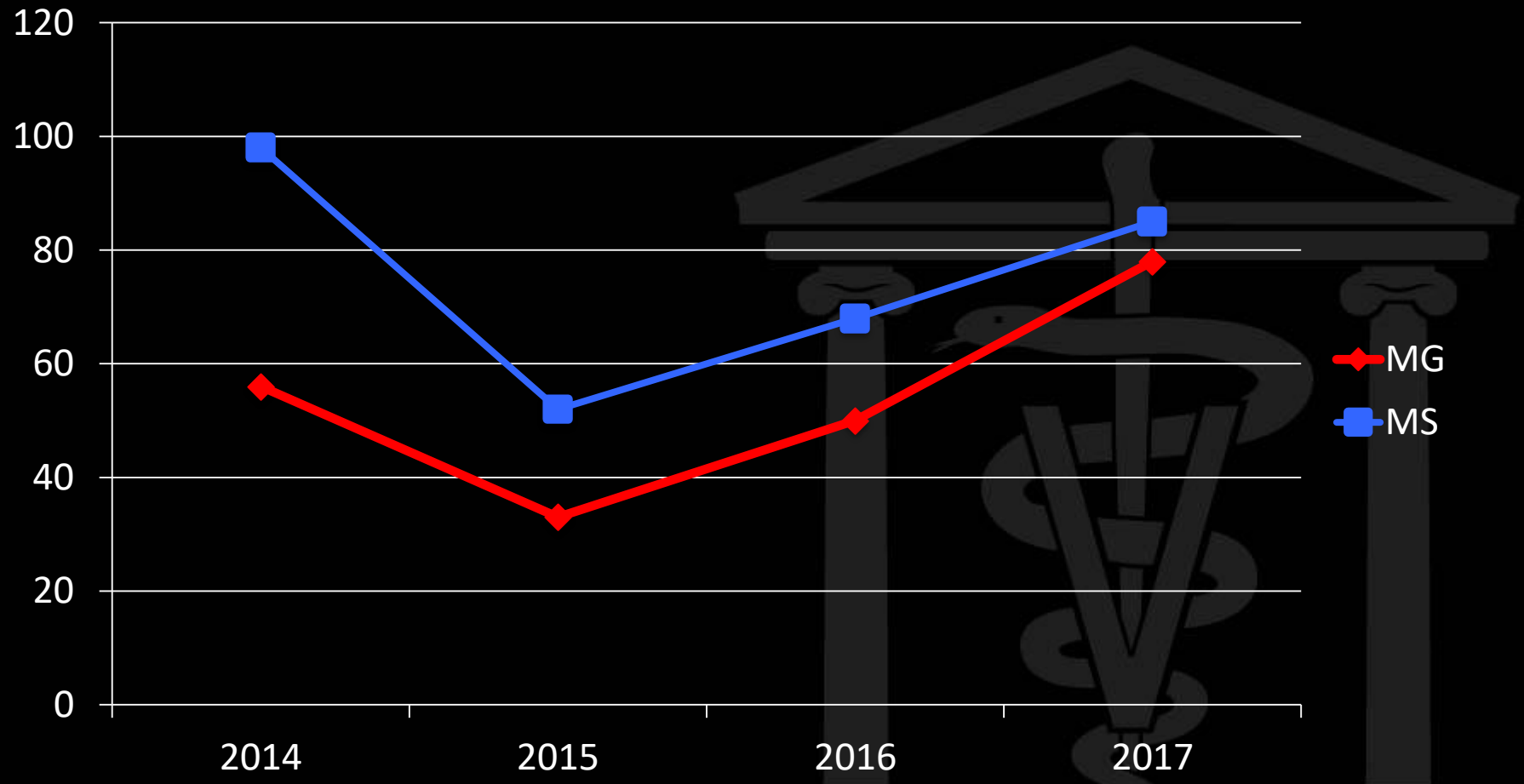
MG Types


70
60
50
40
30
20
10
0
6/85-6/85
A5969/WT-3
F/F
HF/HF
R/WT-13
S6/WT-9
ts-11/HF
ts-11/WT-19
ts-11/WT-7
ts-11/WT-8
ts-11/WT-24
ts-11/WT-28
WT-B/WT-2
WT-DD/WT-8
WT-II/HF
WT-JJJ/WT-2
WT-KK/WT-2
WT-NN/WT-2
WT-Q/WT-20
WT-RR/HF
WT-U
WT-Y/WT-10

MS Sequence Types



No. of positive submissions (no vaccinated flocks)



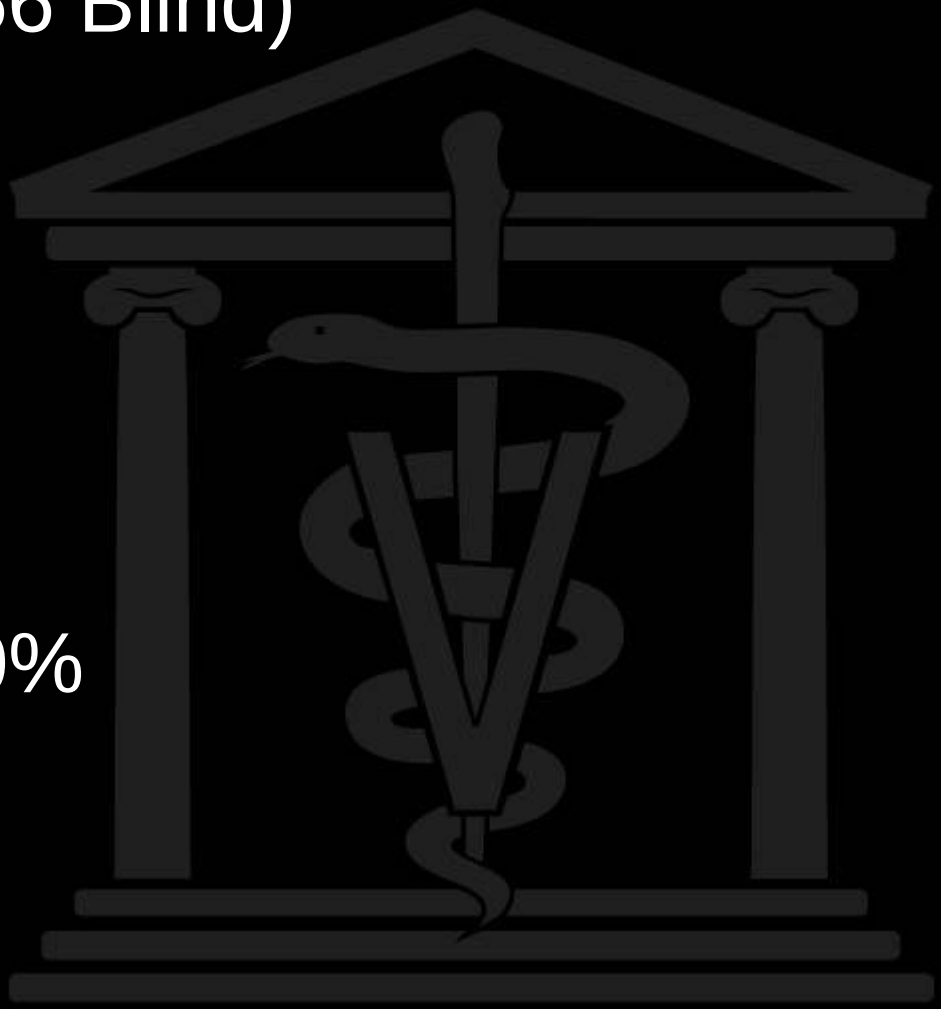
Check Tests

- 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

- 85 kits (29 Known, 56 Blind)
  - 10 MG+
  - 10 MS+
  - 10 negative

- Pass = Score of >80%



Antisera Check Tests Results

Avian Mycoplasma PDRC Check Tests 2017 Results

Lab Name: Poultry Laboratory
Invoice No. 2003

1) SEROLOGY (Blind Kit): **PASS** Score = 97%

ELISA – BioChek MGMS Combo (Score = 93%)
HI – NVSL (Score = 100%)

Comments:

- Two MS+ samples (B14 and B19) were false negative on ELISA (MS HI positive). Some other labs got similar results on ELISA with these samples.

Summary of All Participants (n=85):

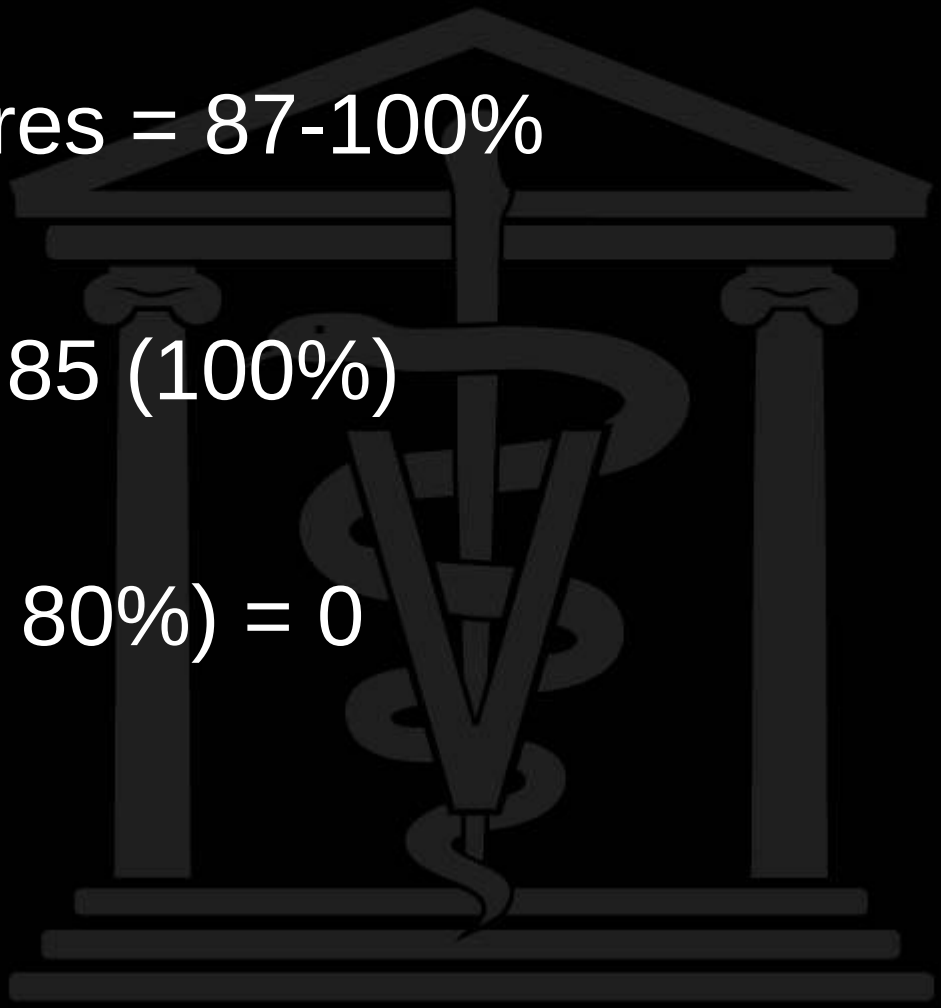
Range of Scores = 87-100%
PASS = 85
FAIL (≤ 80%) = 0

Antisera Check Tests Results

Range of Scores = 87-100%

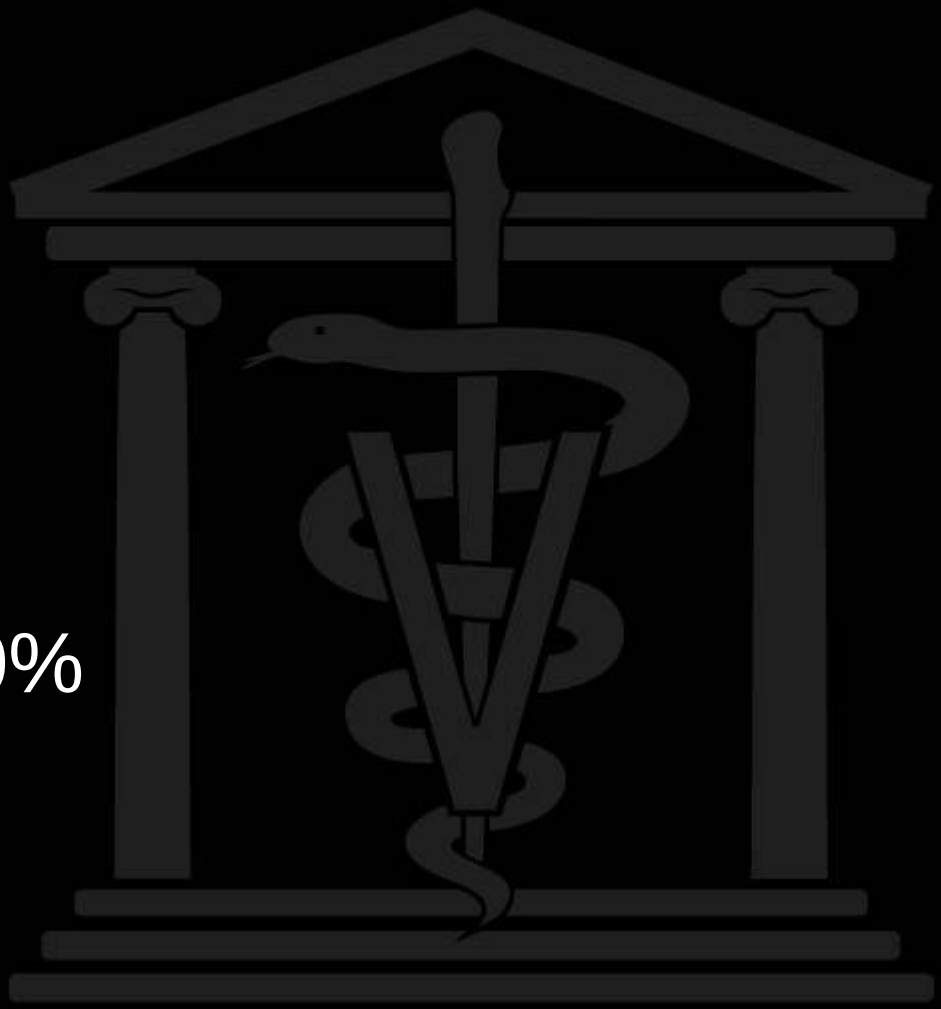
PASS = 85 (100%)

FAIL (< 80%) = 0



PCR Check Tests

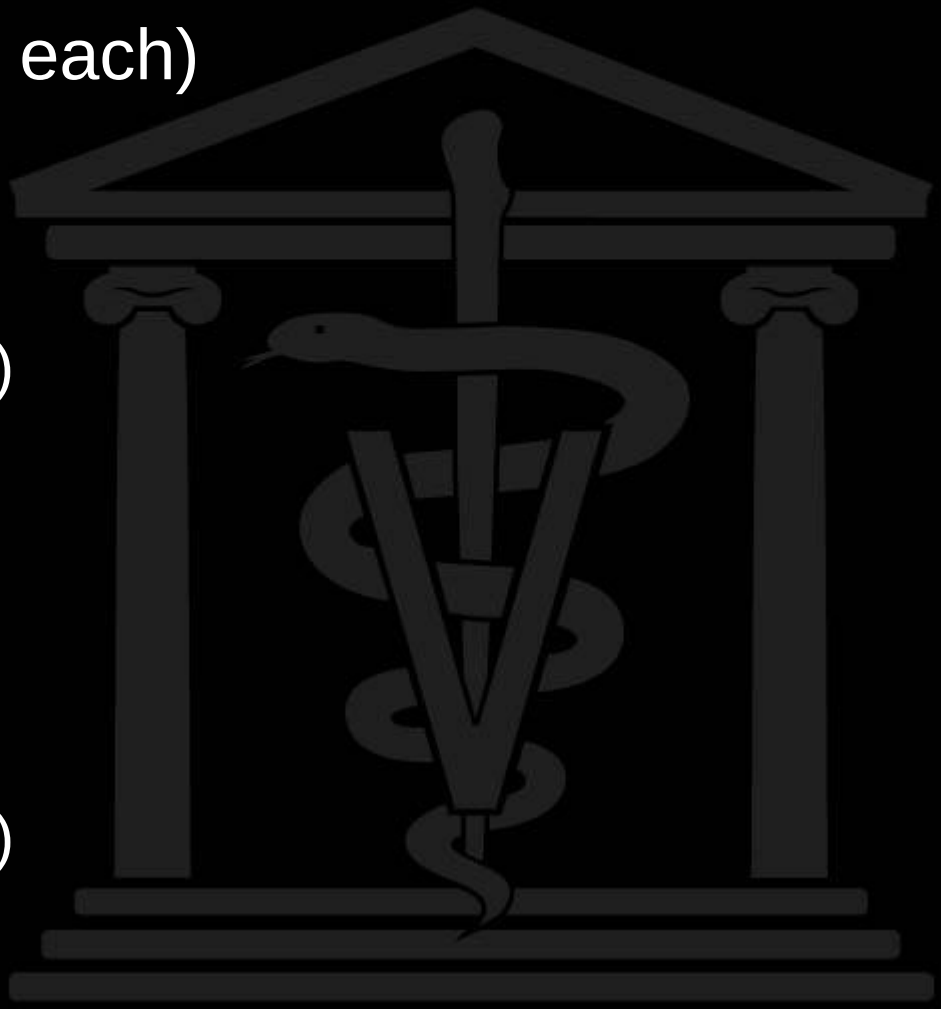
- 67 Kits
  - 49 “Blind”
  - 18 “Known”



- 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

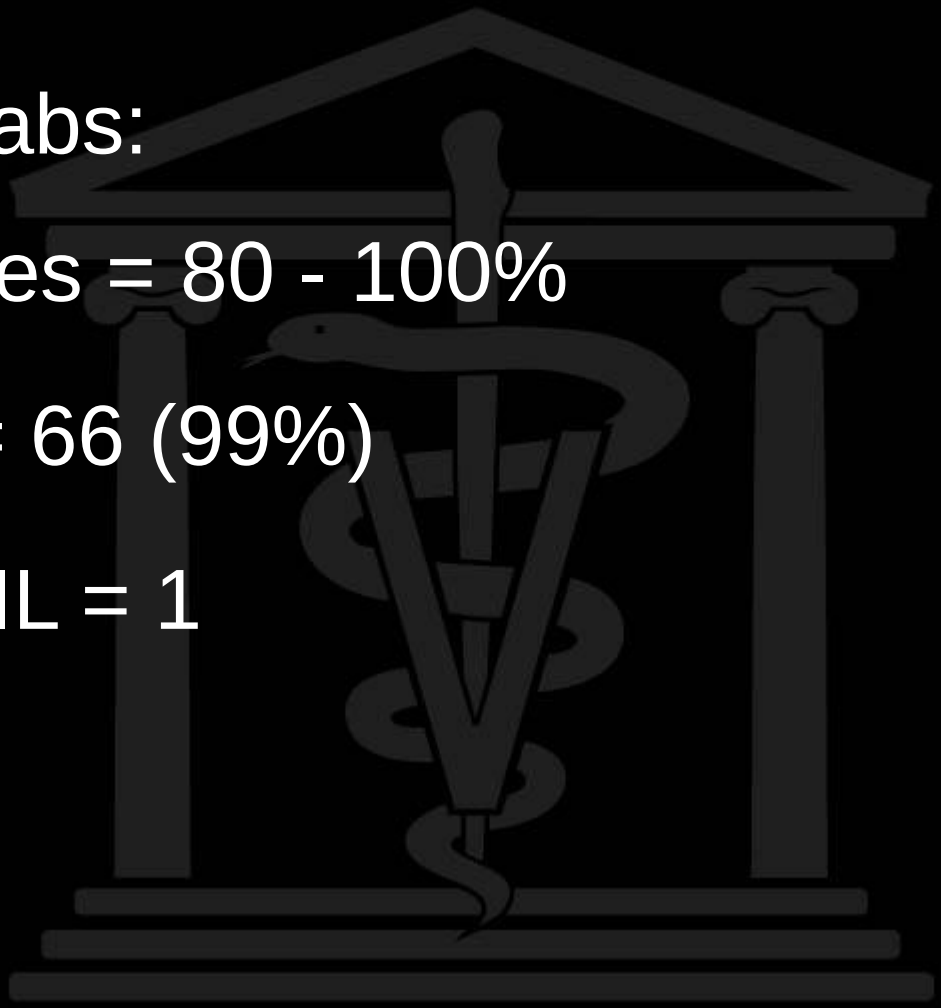
PCR Check Tests Results

Swabs:

Range of Scores = 80 - 100%

PASS = 66 (99%)

FAIL = 1



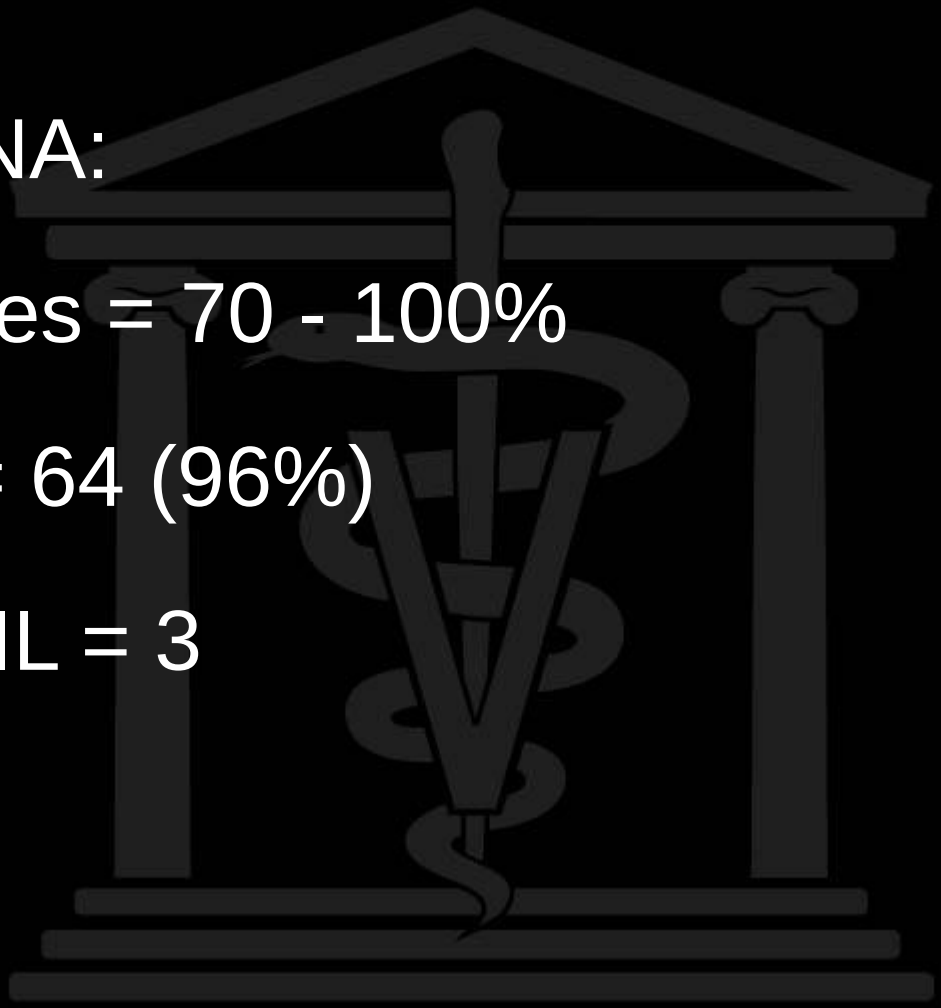
PCR Check Tests Results

DNA:

Range of Scores = 70 - 100%

PASS = 64 (96%)

FAIL = 3



PCR Check Test Results

Avian Mycoplasma PDRC Check Tests 2017 Results

Lab Name: Vet Diagnostic Lab
Invoice No. 2003

2) PCR (Blind Kit):

Swabs: **FAIL** Score = 80%

DNA: **PASS** Score = 90%

Blind Panel	Expected Results		% Participants with correct result (Mean Ct)	
Swab label	MG	MS	MG	MS
17-06	Negative	Negative	100% (-)	100% (-)
17-07	Negative	Positive	100% (-)	100% (33.3)
17-08	Positive	Negative	100% (29.2)	99% (-)
17-09	Positive	Positive	100% (30.2)	99% (31.0)
17-10	Negative	Weak Positive	99% (-)	96% (32.5)
DNA tube				
17-06	Negative	Negative	100% (-)	100% (-)
17-07	Negative	Positive	96% (-)	99% (24.7)
17-08	Positive	Negative	93% (23.0)	100% (-)
17-09	Positive	Positive	99% (28.8)	97% (26.0)
17-10	Negative	Weak Positive	99% (-)	99% (31.0)

Positive expected Ct = 21 - 35
Weak Positive expected Ct = >28

Comments:

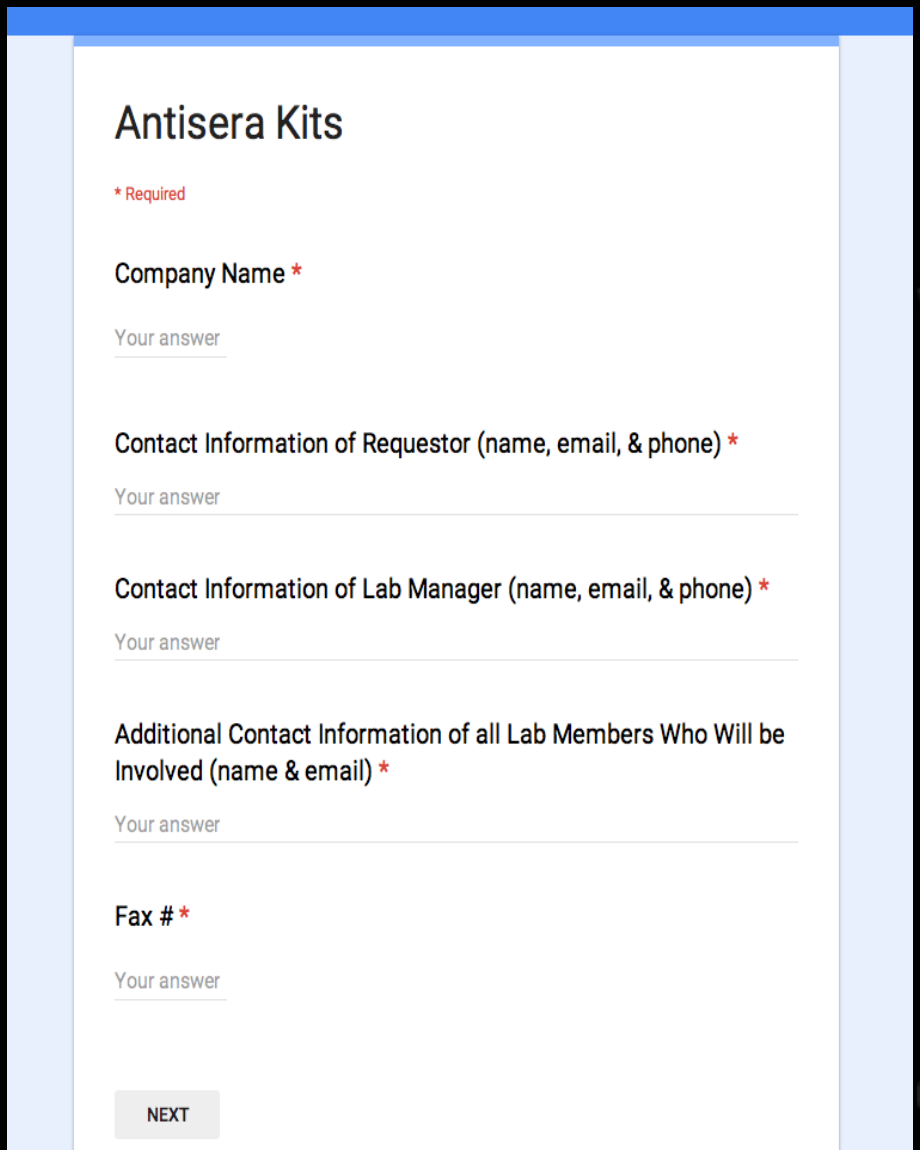
- Incorrect results in submission highlighted
- Two MS+ swab pools (17-09 and 17-10) were false negative on MS PCR.
- MS Ct value from swab (17-07) was higher than other labs (39 vs. 33.3 average)
- One DNA sample (17-07) was false positive on MG PCR.

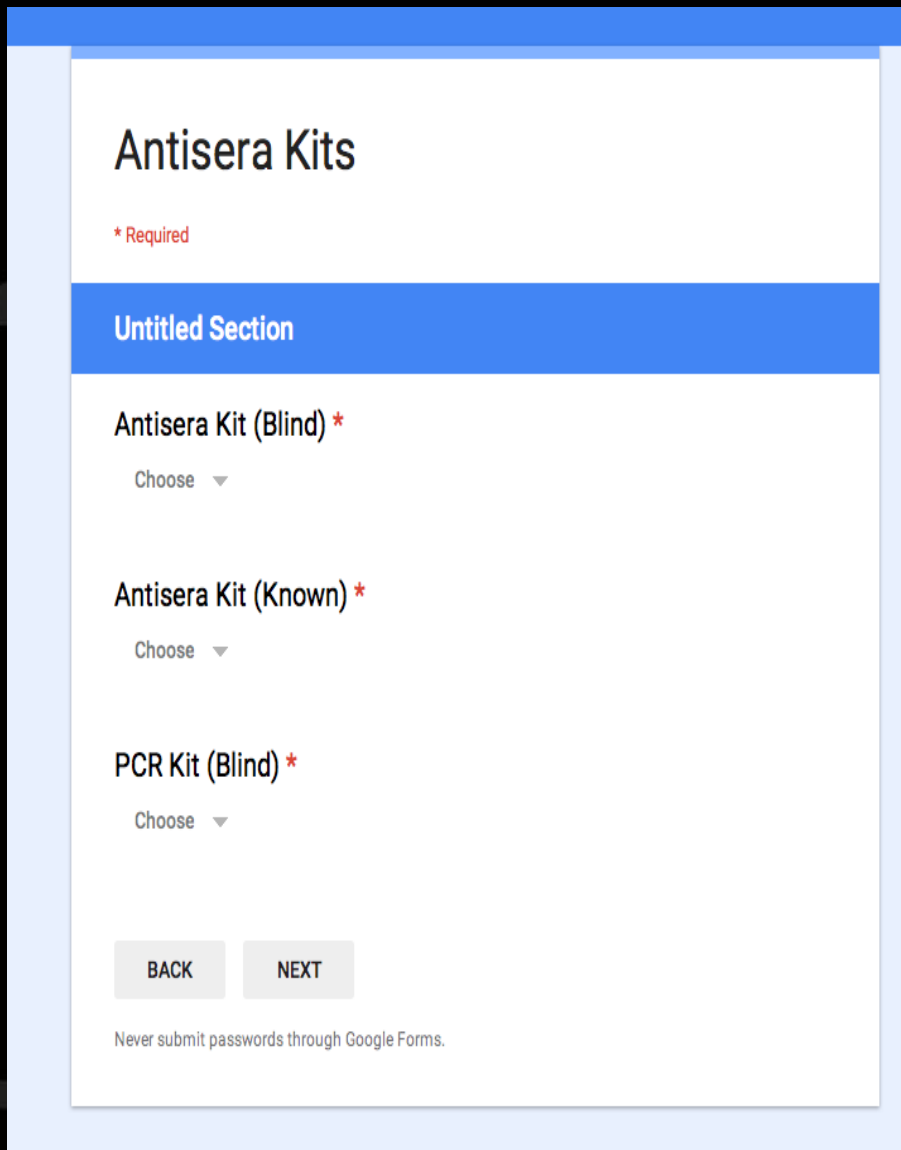
Summary of All Participants:

Swabs (n= 67):
Range of Scores = 80-100%
PASS = 66
FAIL (≤ 80%) = 1

DNA (n= 67):
Range of Scores = 70-100%
PASS = 64
FAIL (≤ 80%) = 3

Next panel –September 2018





PCR

- Swab material
- Moistened vs Dry swabs
- Temperature and time of storage
- Transport/Prep media

Swabbing for PCR

Tracheal

Rachel Jude, 2017

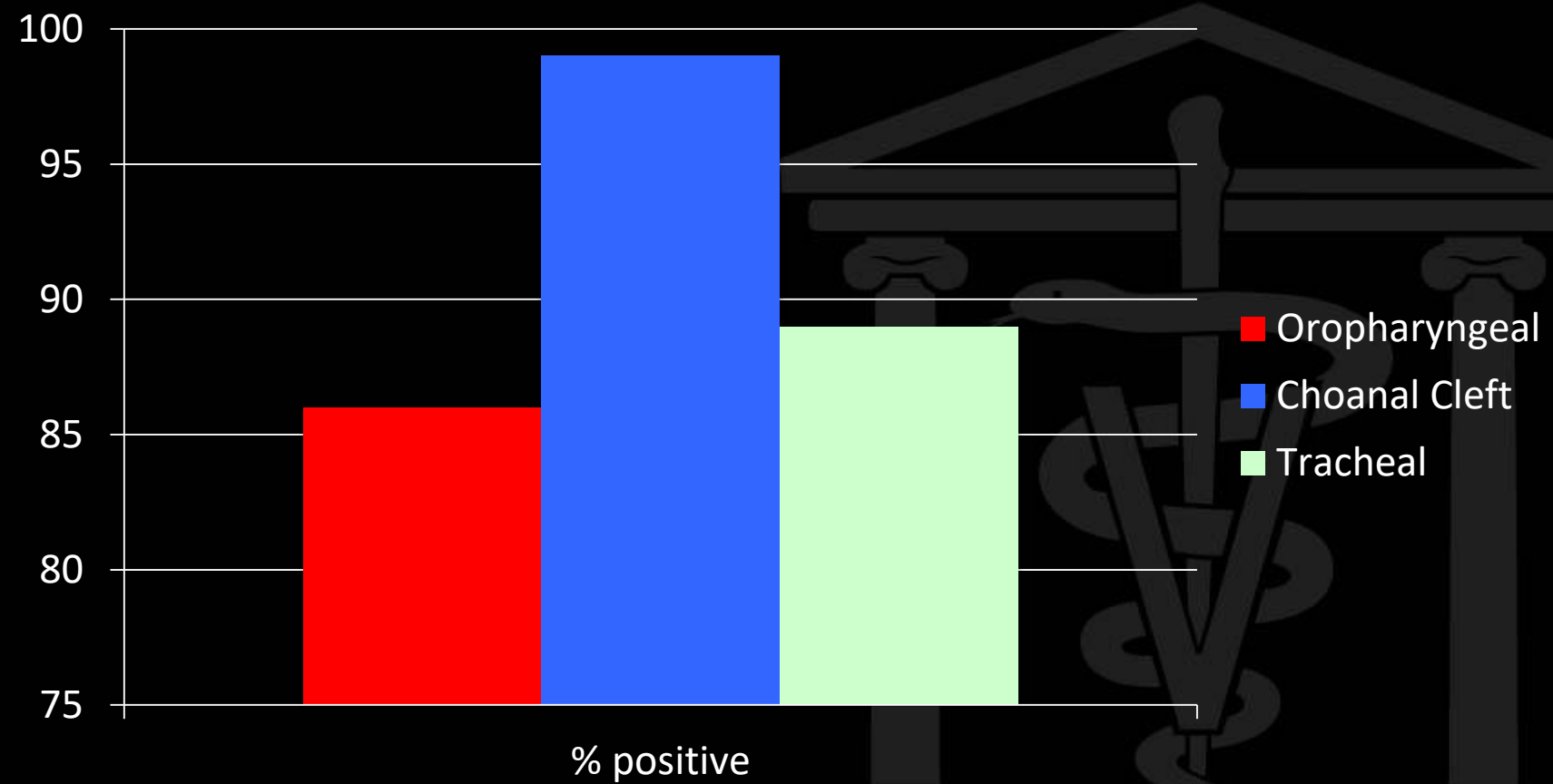
Choanal

Rachel Jude, 2017

Oropharyngeal

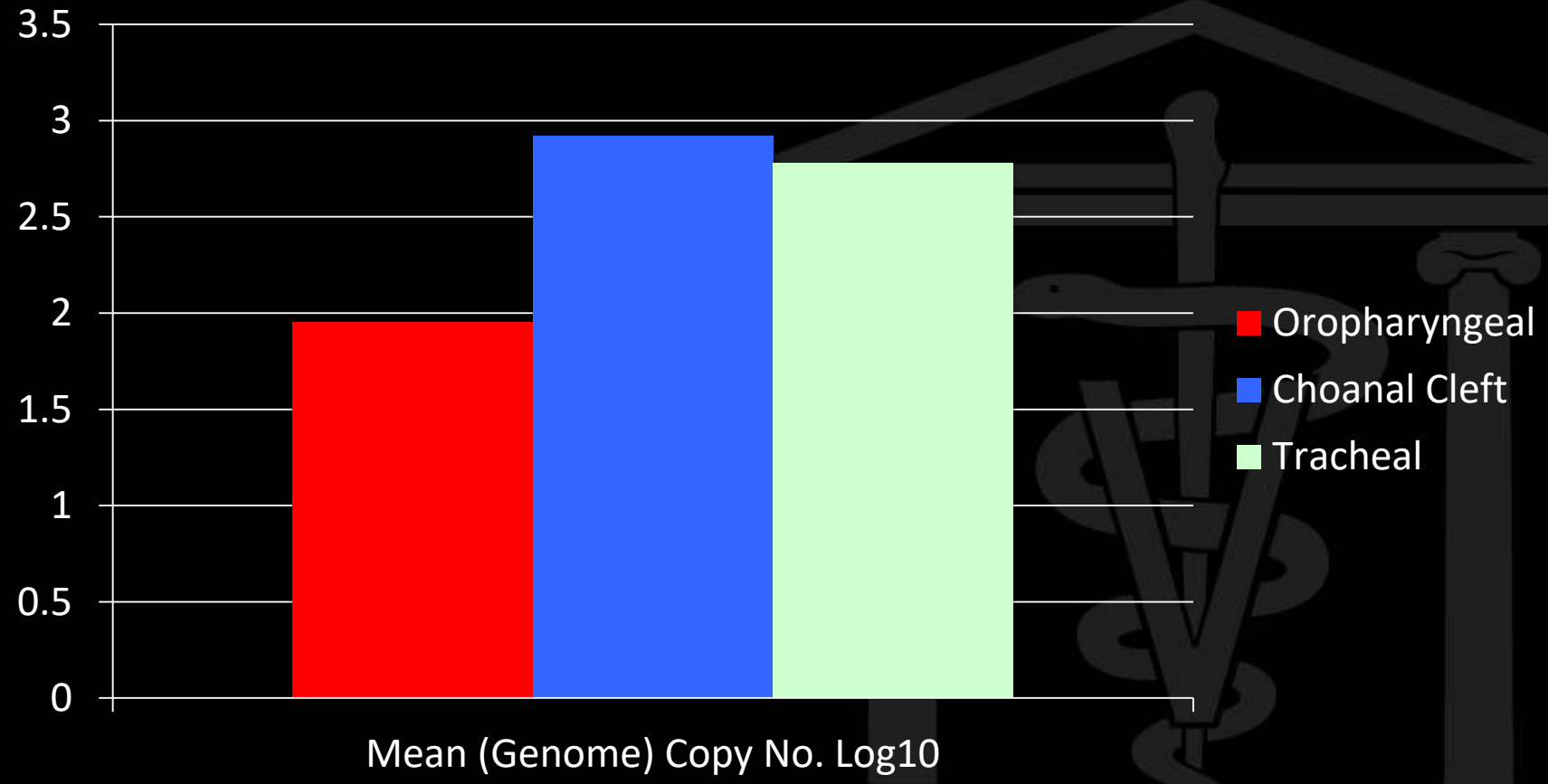
Rachel Jude, 2017

Swabbing for MG and MS Detection by Real-Time PCR



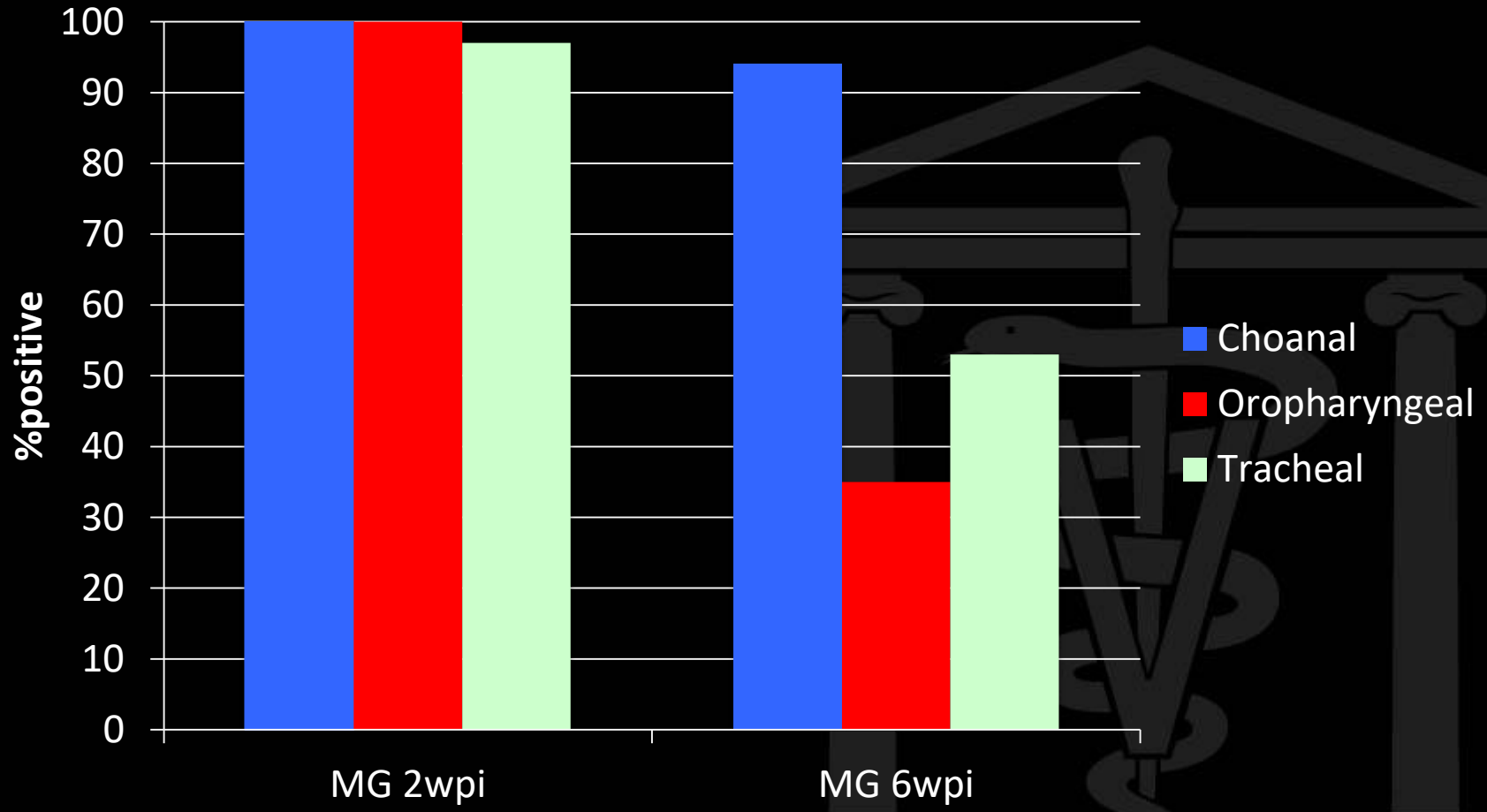
Pierre, S., *et al*., unpublished

Swabbing for MG and MS Detection by Real-Time PCR



Pierre, S., *et al*., unpublished

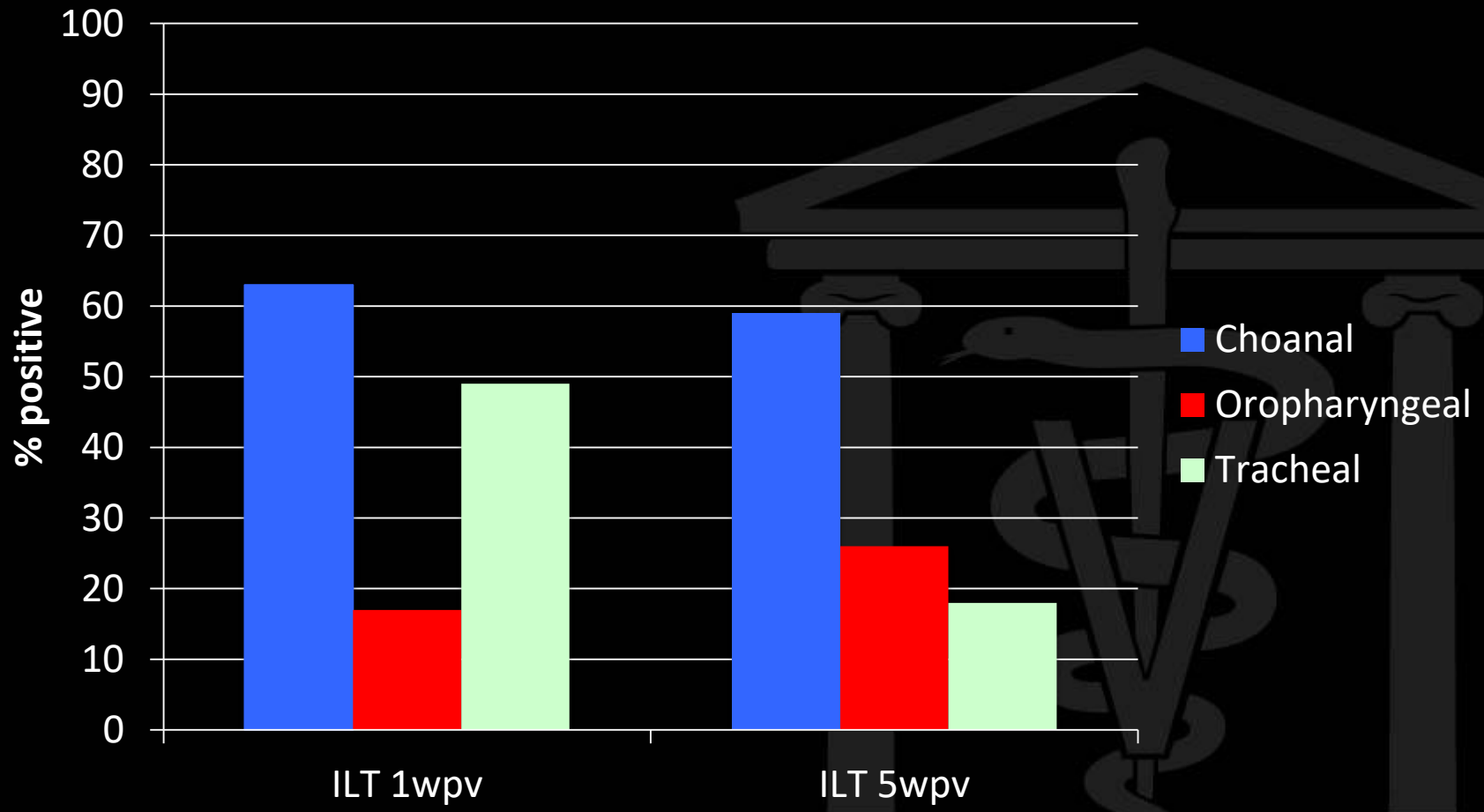
Swabbing for MG Detection by Real-Time PCR



Jude, R., *et al*., unpublished

This project was supported by Agriculture and Food Research Initiative Competitive Grant no. (2015-68004-23131) from the USDA National Institute of Food and Agriculture.

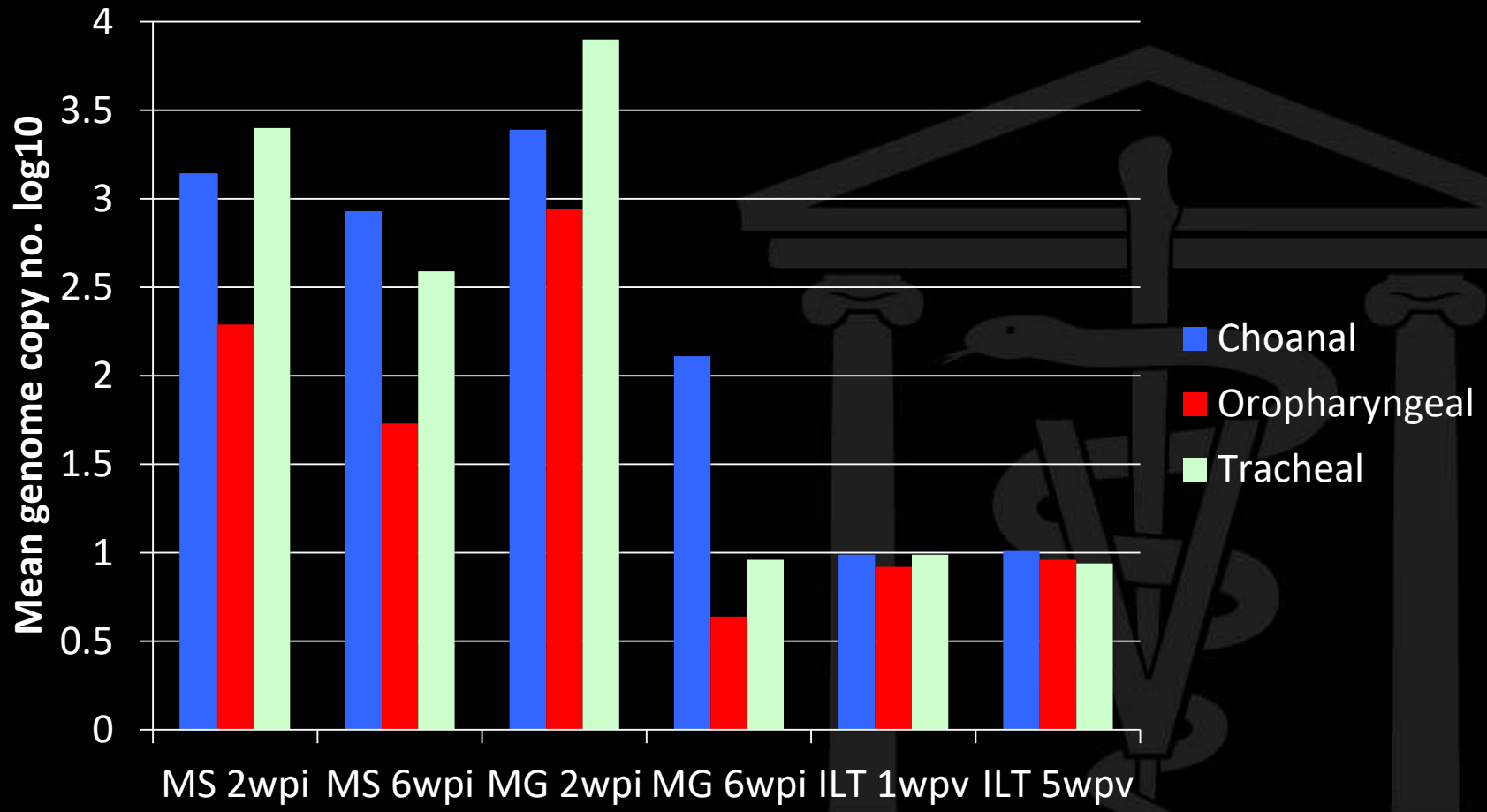
Swabbing for ILT Detection by Real-Time PCR



Jude, R., *et al*., unpublished

This project was supported by Agriculture and Food Research Initiative Competitive Grant no. (2015-68004-23131) from the USDA National Institute of Food and Agriculture.

Swabbing for MG, MS & ILT Detection by Real-Time PCR



Jude, R., *et al.*, unpublished

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Thank you

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