Leman China 2022

Consensus on diagnostic criteria for PCV3-associated diseases: Are we there yet?

Fabio Vannucci

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UNIVERSITY OF MINNESOTA

Driven to Discover℠

Overview

University of Minnesota
Veterinary Diagnostic Lab

Swine Health Information Center

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South Dakota State University

Dr. Chun-Ming Lin

Iowa State University

Dr. Pablo Pineyro-Pineiro

Outline

- How often do we find it?
- How often do we find it primarily associated with clinical diseases?
- What types of clinical diseases are associated with histological lesions and PCV3 detection?
- ~~How to deal with it?~~

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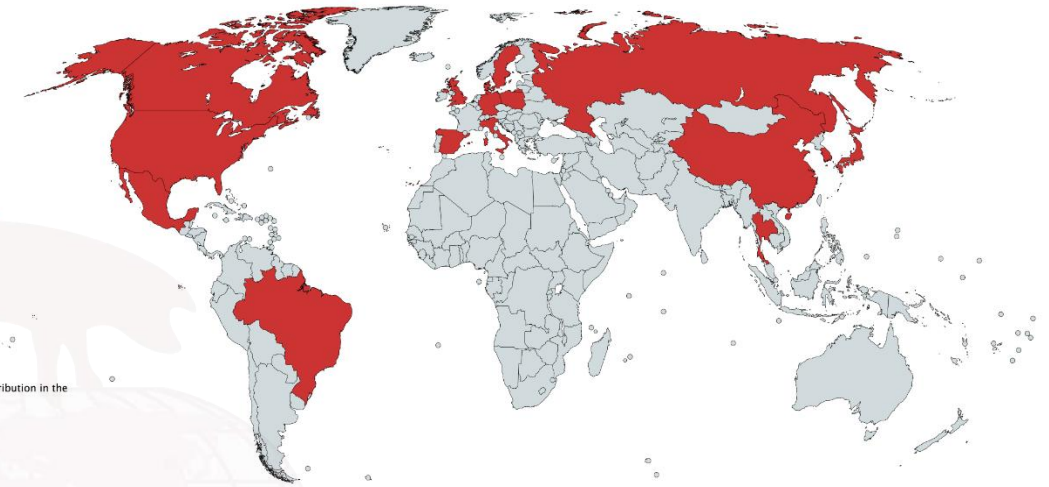
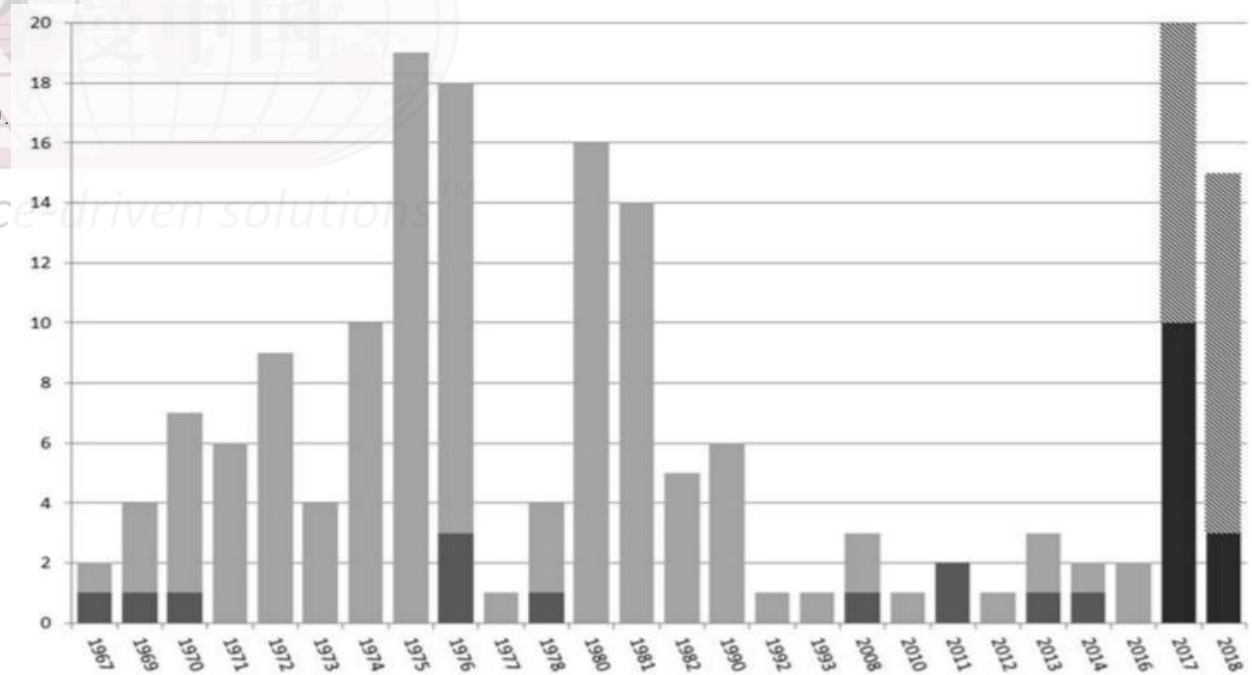
How often do we find it?

- U.S, Ⓟ□◎⌒ Ⓜ○∠⬀⬀ 2010 (L⌯ ○⬀⬀ ∠Ⓛ., 2011)
- T⬀∠⌯Ⓛ∠∅⌓, 2006 (S—⌒Ⓜ∠⌒ ○⬀⬀ ∠Ⓛ., 2019)
- U.K, 2002 (C□ⓁⓁ⌯∅Ⓢ ○⬀⬀ ∠Ⓛ., 2017)
- SⓅ∠⌯∅, 1996 (KⓁ∠—Ⓜ∠∅∅ ○⬀⬀ ∠Ⓛ., 2018)
- C⬀⌯∅∠, 1996 (S—∅ ○⬀⬀ ∠Ⓛ., 2018)
- S∨○⌓○∅, 1993 (Y○ ○⬀⬀ ∠Ⓛ., 2018)
- B◎∠◺⌯Ⓛ, 1967 (R□⌓◎⌯∅—○Ⓢ ○⬀⬀ ∠Ⓛ., 2020)





How often do we find it?

- MN-VDL database from Feb 2016 and Jan 2018

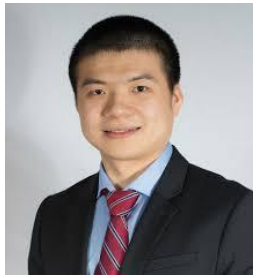
Z↗○∅ Y∠∅/○

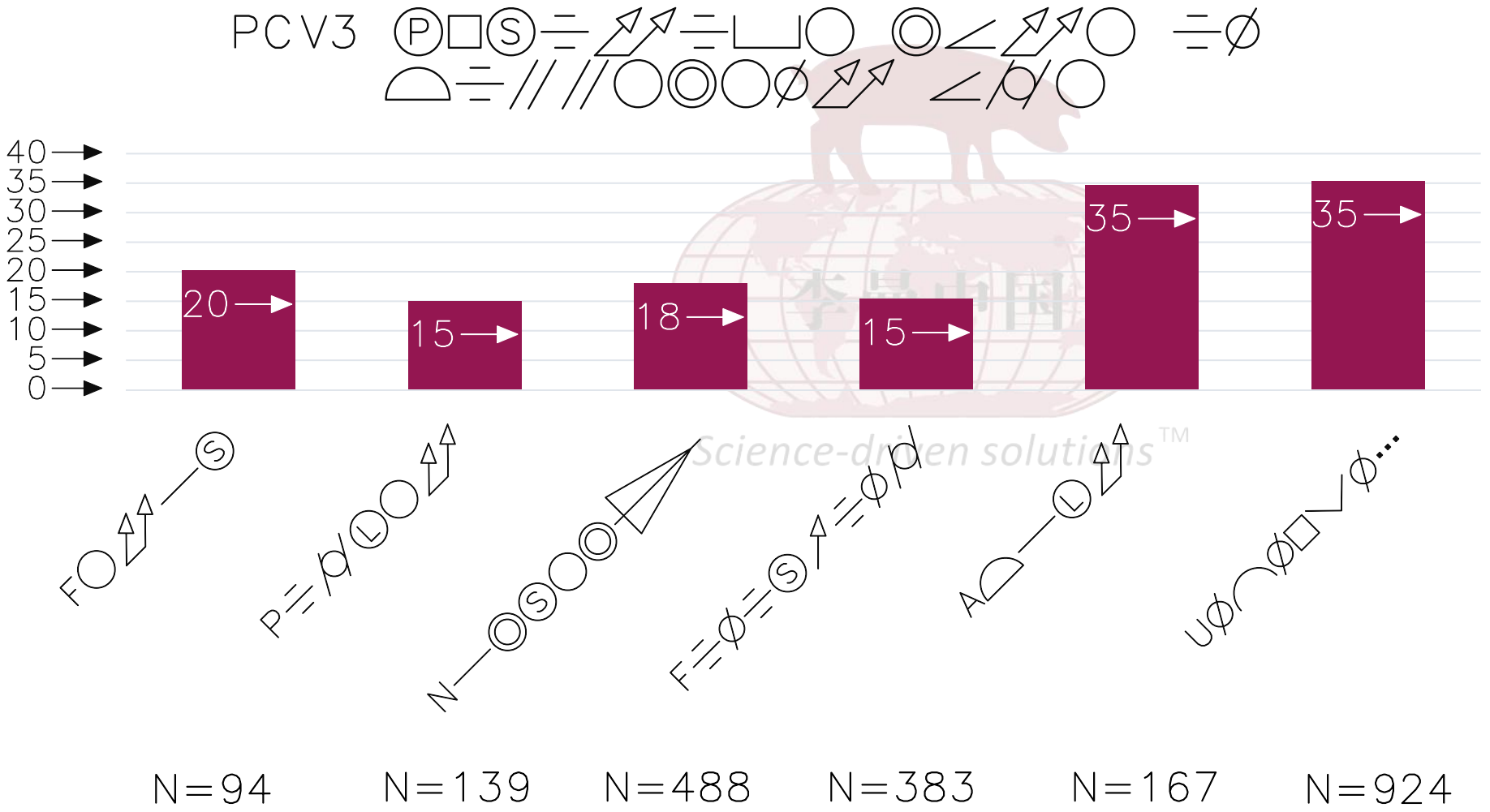
S Ⓟ○▱≡Ⓜ○ ∅ ↗↗▷Ⓟ○	PCV3 Ⓟ□Ⓢ≡↗↗ ≡⊔○	PCV3 ∅○/○/∠↗↗ ≡⊔○	T□↗↗ ∠Ⓛ	PCV3 ◎∠↗↗ ○
T≡ⓈⓈ—○ ↗□Ⓜ□/○/○∅∠ ↗↗○	226	1069	1295	18→
S○◎—Ⓜ	112	371	483	23→
O◎∠Ⓛ //Ⓛ—≡⌓	90	11	101	89→
P◎□▱○ⓈⓈ≡ ∅/○/ //Ⓛ—≡⌓	79	19	98	81→

- PCV3 Ⓟ□Ⓢ≡↗↗≡⊔○ ◎∠↗↗○
  - S∠ⓂⓅⓁ○: 27→
  - C∠Ⓢ○: 35→
  - S≡↗↗○: 38→
  - S↗↗∠↗↗○: 86→

How often do we find it?

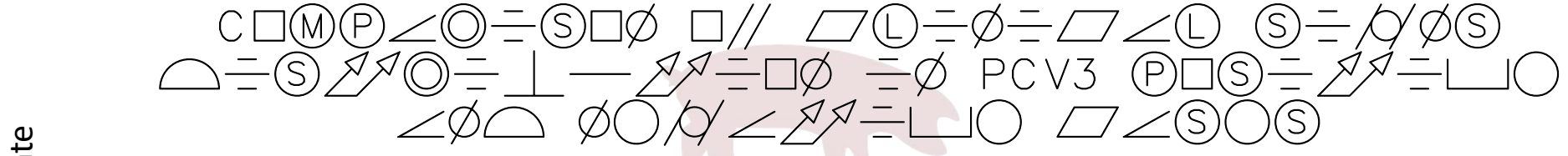
- MN-VDL database from Feb 2016 and Jan 2018

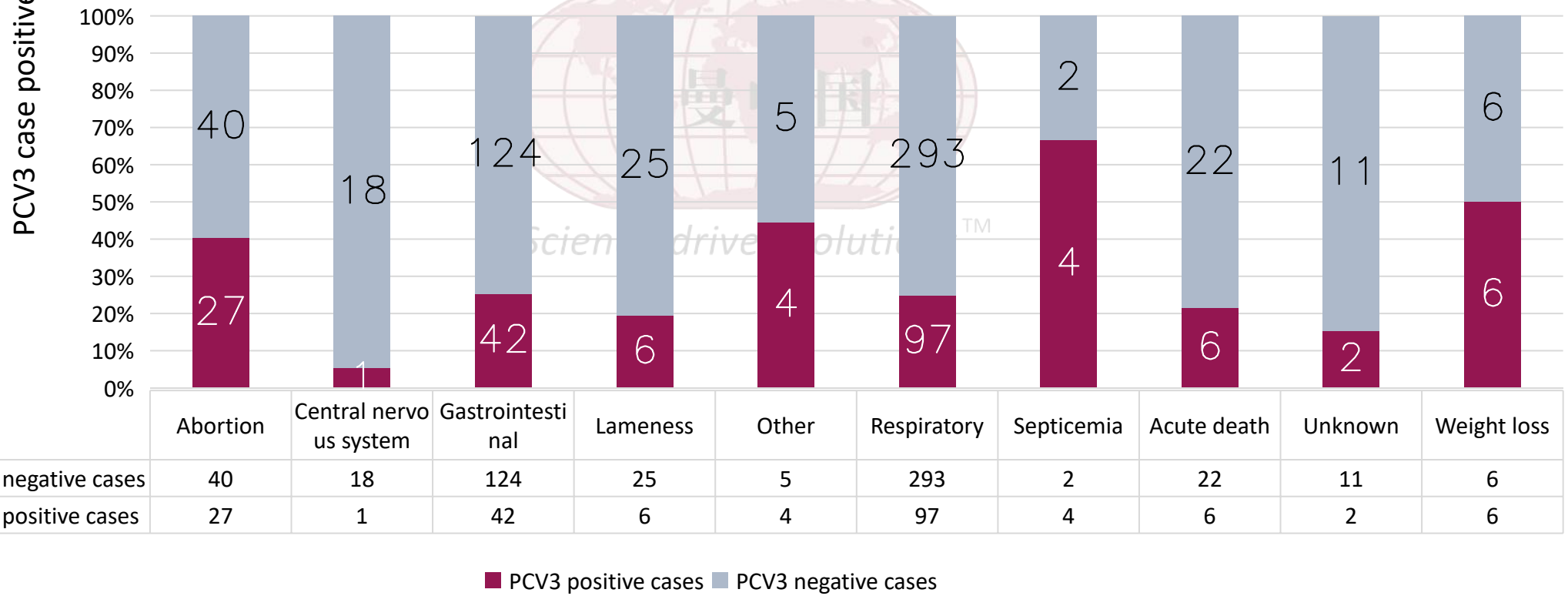




How often do we find it primarily associated with clinical diseases?

- MN-VDL database from Feb 2016 and Jan 2018





	Abortion	Central nervous system	Gastrointestinal	Lameness	Other	Respiratory	Septicemia	Acute death	Unknown	Weight loss
PCV3 negative cases	40	18	124	25	5	293	2	22	11	6
PCV3 positive cases	27	1	42	6	4	97	4	6	2	6

N=409
N=149

What types of clinical diseases are associated with histological lesions and PCV3 detection?

- None
- Reproductive failure
- Pre-weaning mortality
- Post-weaning wasting/mortality

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- **Reproductive failure**
  - Increased return to estrus, abortions, mummies, stillborn
  - Lowered conception rate
  - Retrospective study (UofM) – n=67
    - 11 cases: PCR positive for PCV3 (only) - differentials PPV, PRRSv, PCV2
  - Retrospective study (CReSA, Spain) – n=53
    - 16 cases: PCR positive for PCV3 (only) - differentials PPV, PRRSv, PCV2

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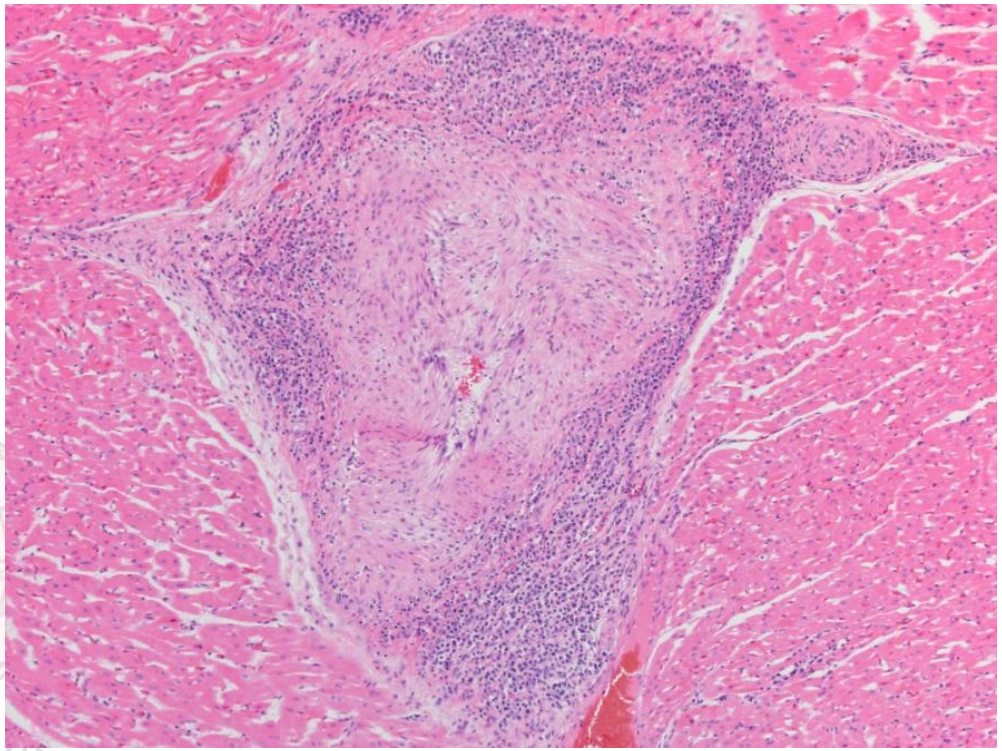
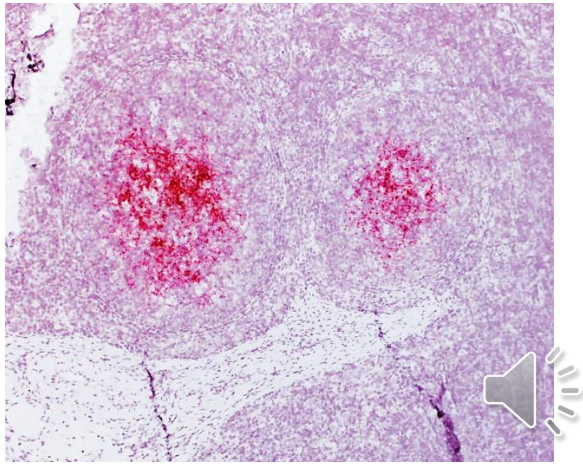
What types of clinical diseases are associated with histological lesions and PCV3 detection?

- **Reproductive failure**

What types of clinical diseases are associated with histological lesions and PCV3 detection?

- **Pre- and Post-weaning disease**
  - Nonspecific clinical syndrome:
    - Sudden death, wasting, dyspnea, CNS
  - Multisystemic inflammation
    - Vasculitis
    - Myocarditis
    - Interstitial pneumonia
    - Lymphoid depletion has NOT been a remarkable feature





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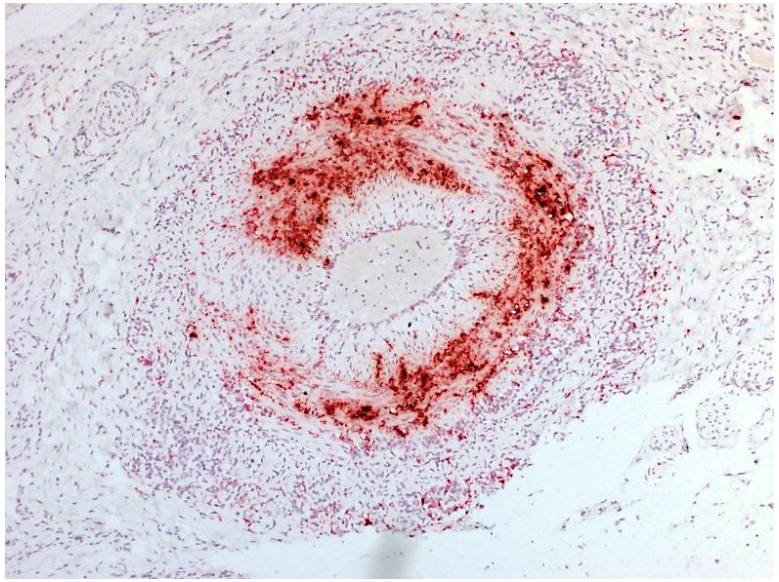
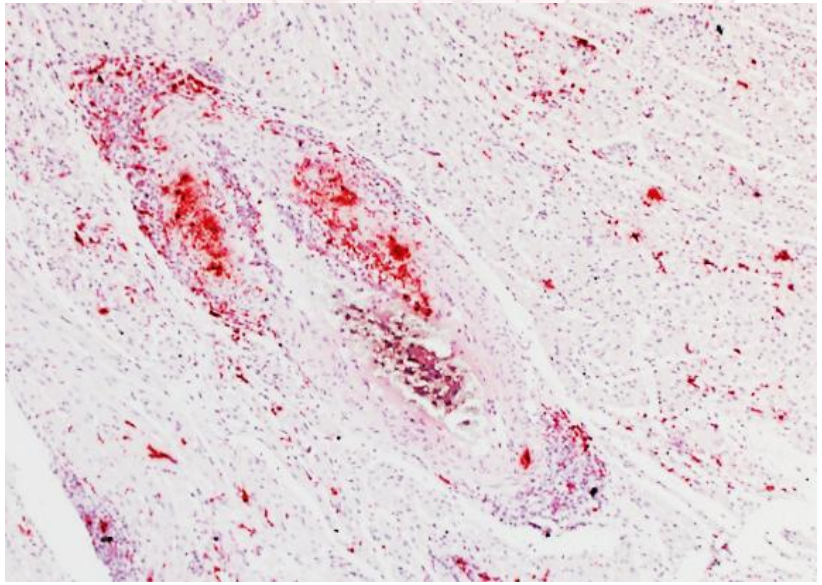
What types of clinical diseases are associated with histological lesions and PCV3 detection?

- **PCV 3 detection**
  - PCR: duplex assay PCV2/PCV3
  - *In situ* detection

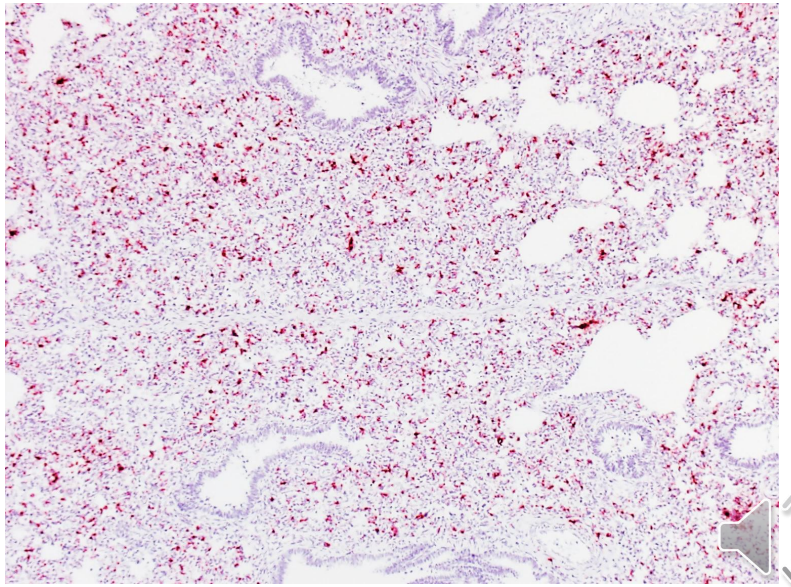
Vasculitis



Myocarditis

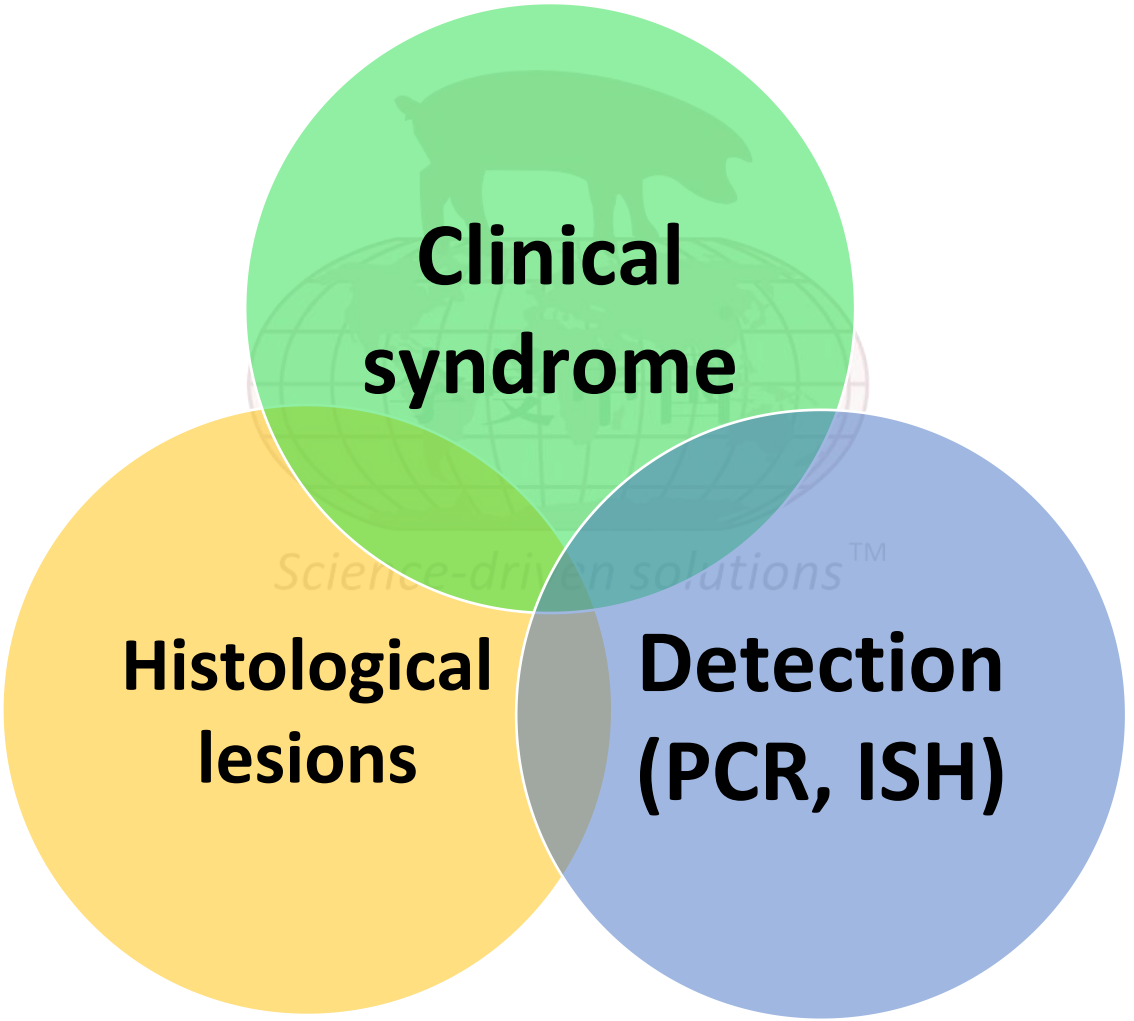


Interstitial pneumonia



What types of clinical diseases are associated with histological lesions and PCV3 detection?

- **Diagnostic criteria for case definition**



- **Reality check**

<u>Reproductive failure:</u>

Fresh fetuses

(questionable preservation)

+

Histopathology = autolysis

+

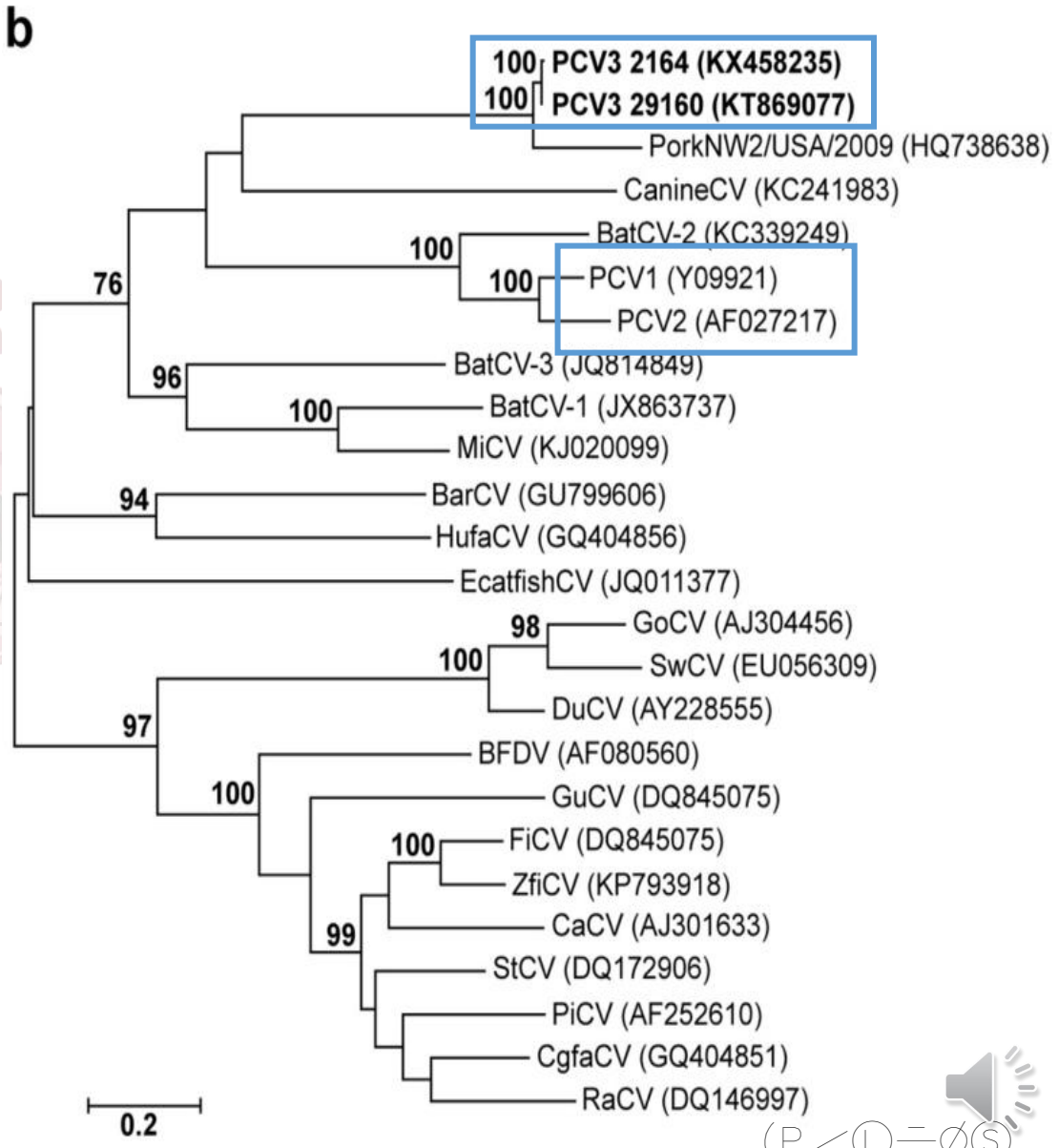
Positive PCR

How to deal with that?

- PCVs: genetic differences
  - Principais proteinas
    - *cap* (ORF2)

PCV1 and PCV2 → ~68%

PCV2 and PCV3 → ~35%



Take home messagges

- How often do we find it?
  - Endemically
- How often do we find it primarily associated with clinical diseases?
  - Sporadically
- What types of clinical diseases are associated with histological lesions and PCV3 detection?
  - None, reproductive failure, pre- and post-weaning wasting/mortality
- How to deal with it?
  - Not vaccinating for PCV2

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