



## 病理剖檢及採樣送檢訓練班- 進階課程

# 淺談豬隻呼吸道及消化道疾病診斷

邱慧英 副教授

國立中興大學獸醫病理生物學研究所

[hychiou@dragon.nchu.edu.tw/](mailto:hychiou@dragon.nchu.edu.tw)  
[hic01.chiou@gmail.com](mailto:hic01.chiou@gmail.com)





# 淺談豬隻呼吸道及消化道疾病診斷

## I. 不同階段豬隻腸道疾病



# 大綱

1. 哺乳豬消化道疾病與診斷- 初生仔豬下痢
2. 保育豬消化道疾病與診斷- 離乳後下痢
3. 肥育 (生長) 豬消化道疾病與診斷- 生長豬下痢

Enteric disease

Clinical diagnosis

Necropsy and lesions  
evaluation

Sampling

- **Bacteriology** mainly based on quantitative criteria
- **PCRs**
- **Histopathology**
- **Immunohistochemistry**
- **In situ hybridization**
- **Immunofluorescence**
- **Virological methods**
- **Others**

Aetiological diagnosis

In many cases the information collected allow to a presumptive diagnosis

The presumptive diagnosis drive the sampling for confirmatory laboratory investigations



## Particularly hazardous periods in the pigs life

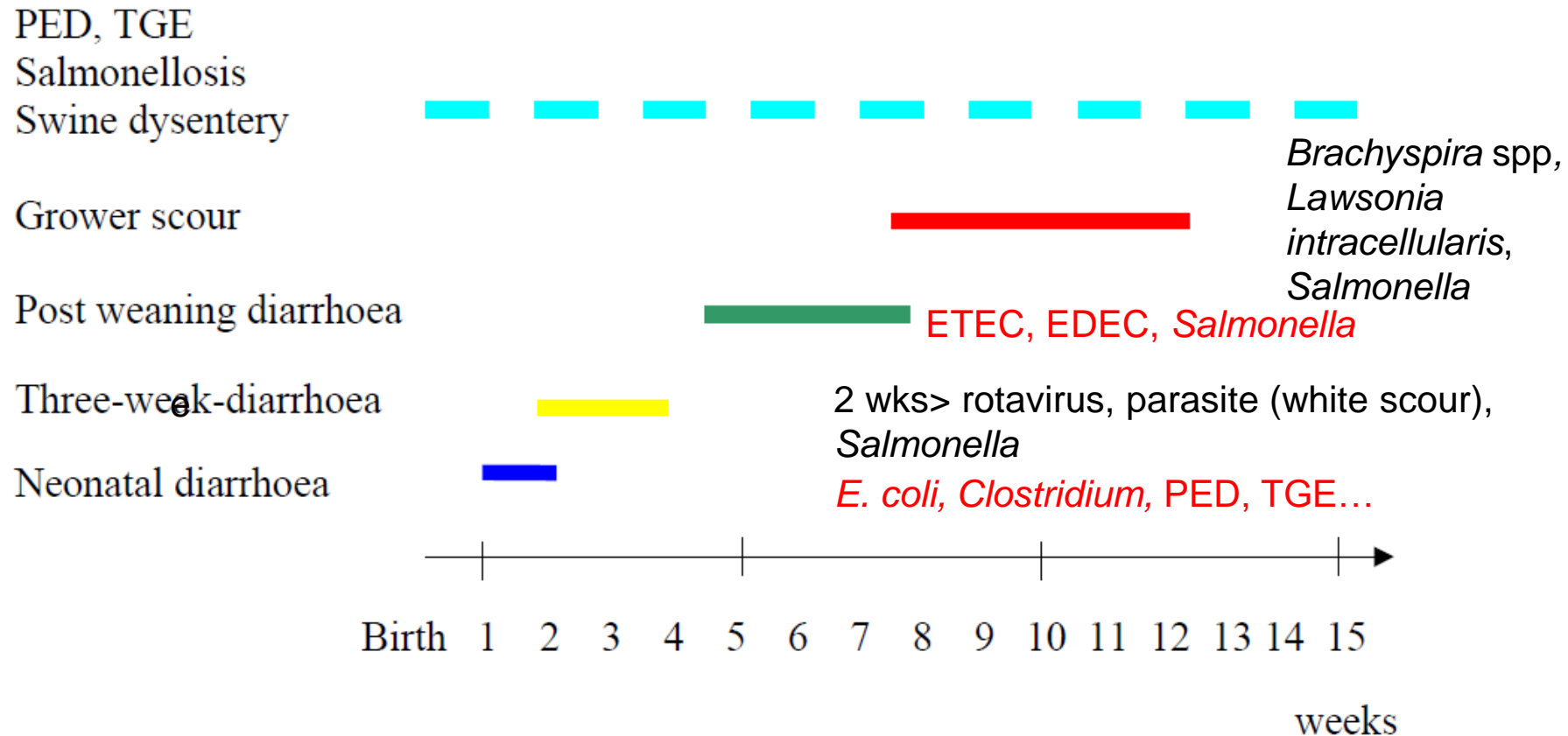
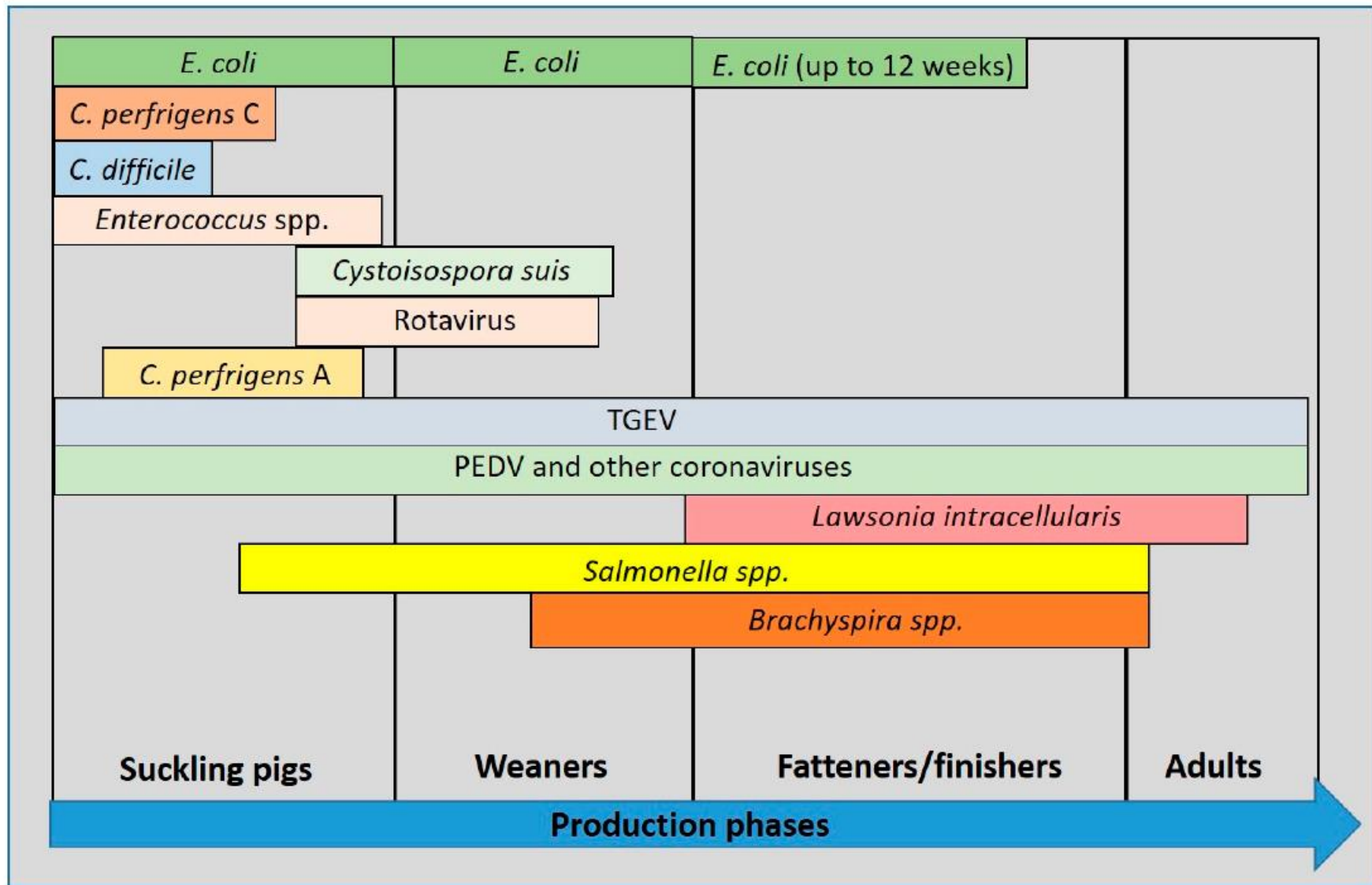
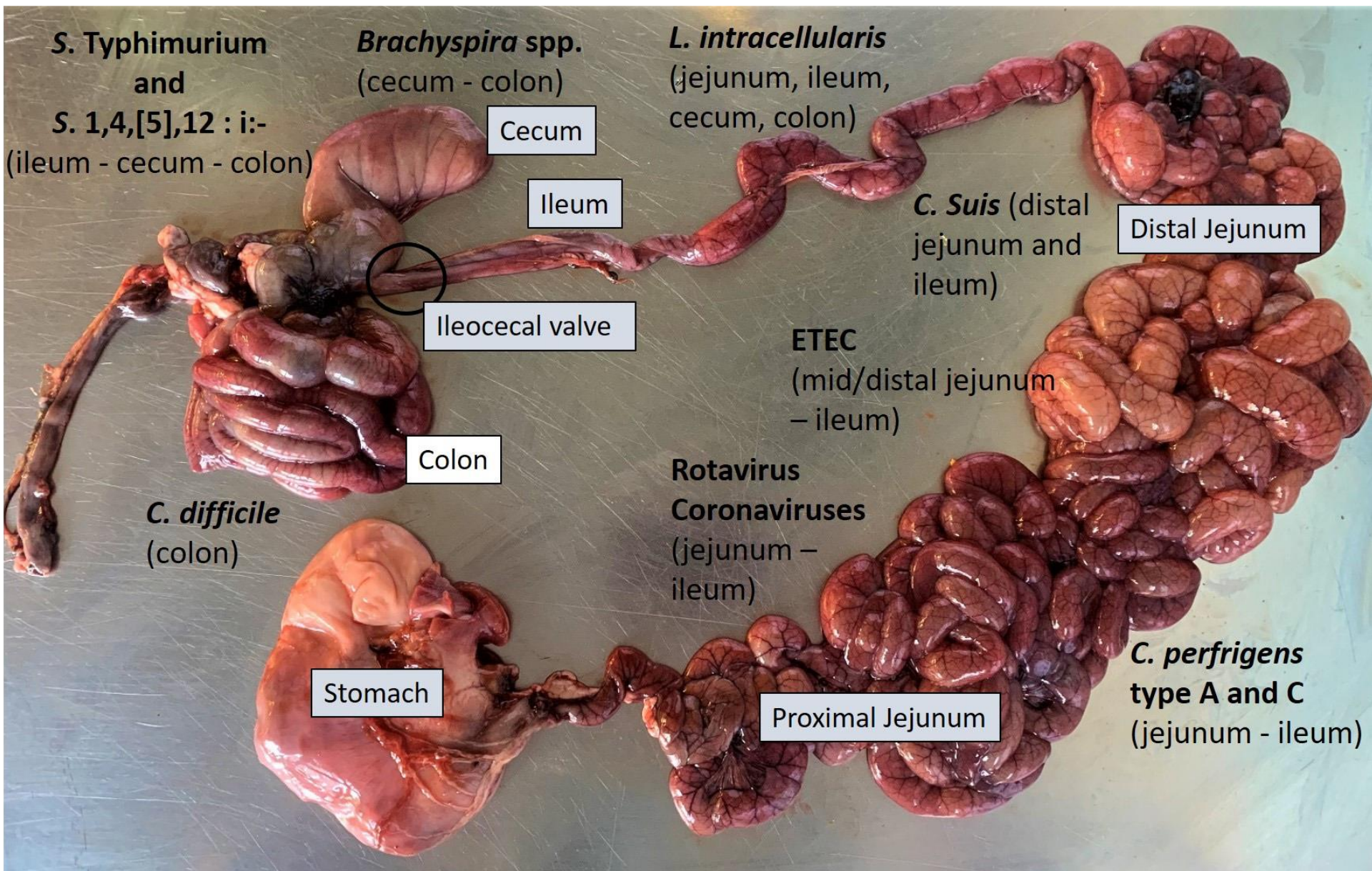


Fig. 2. Diarrhoea in pig is often related to certain ages or certain periods during rearing.

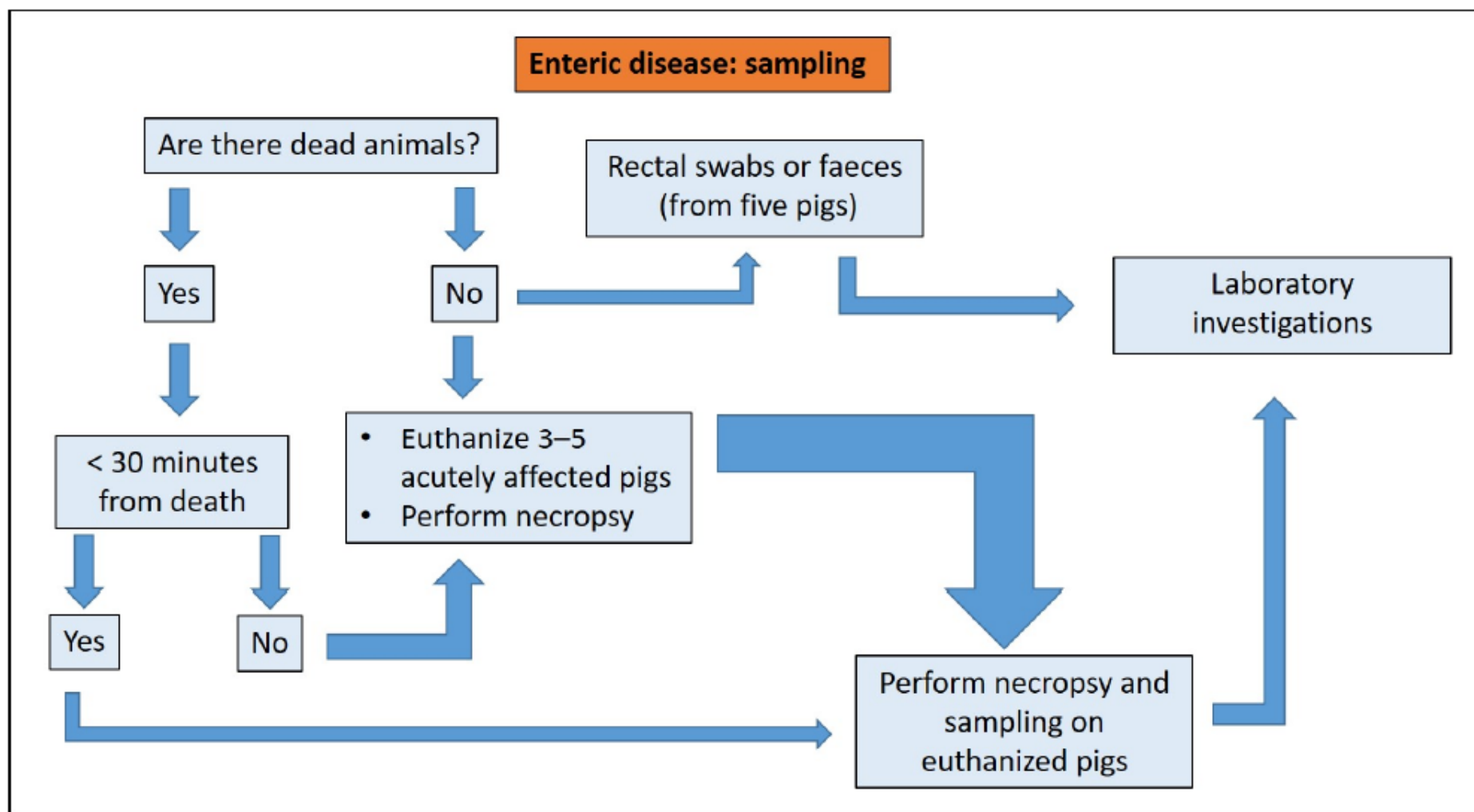
Jacobson M. 2003



**Figure 2.** Incidence of pathogens in enteric disease in pigs related to age (modified from Ségales et al., 2013) [6].







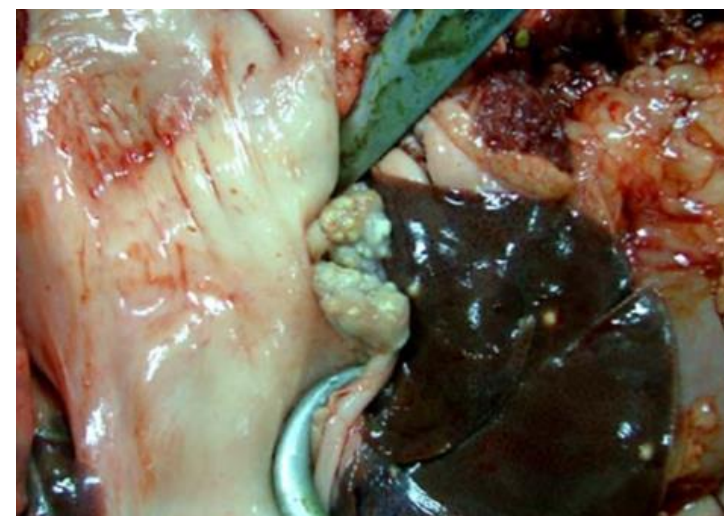
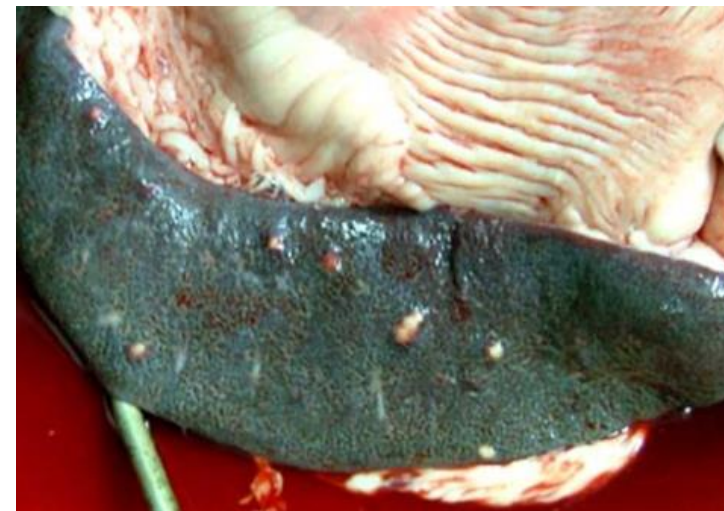
**Figure 4.** Enteric disease: sampling criteria in the diagnostic pathway.

# 僅適用於採樣後直接福馬林固定檢體

**Table 1.** Enteric disease: specimen collection for histopathology (Modified from Arruda and Gauger, 2019) [4].

Tissue/Sample	Specimen Collection
Lymph node	Mesenteric—1 cm thickness
Tonsils	Half of a tonsil
Spleen	1 cm thickness
Liver	1 sample 2 × 2 × 0.5 cm
Kidney	Half of a kidney, 0.5 cm slice through the centre
Stomach	3 × 3 × 3 cm piece 1 cm thickness
Jejunum	Three sections, 2 cm long
Ileum	Three sections, 2 cm long
Spiral colon	Three sections, 2 cm long

# 豬 結核病





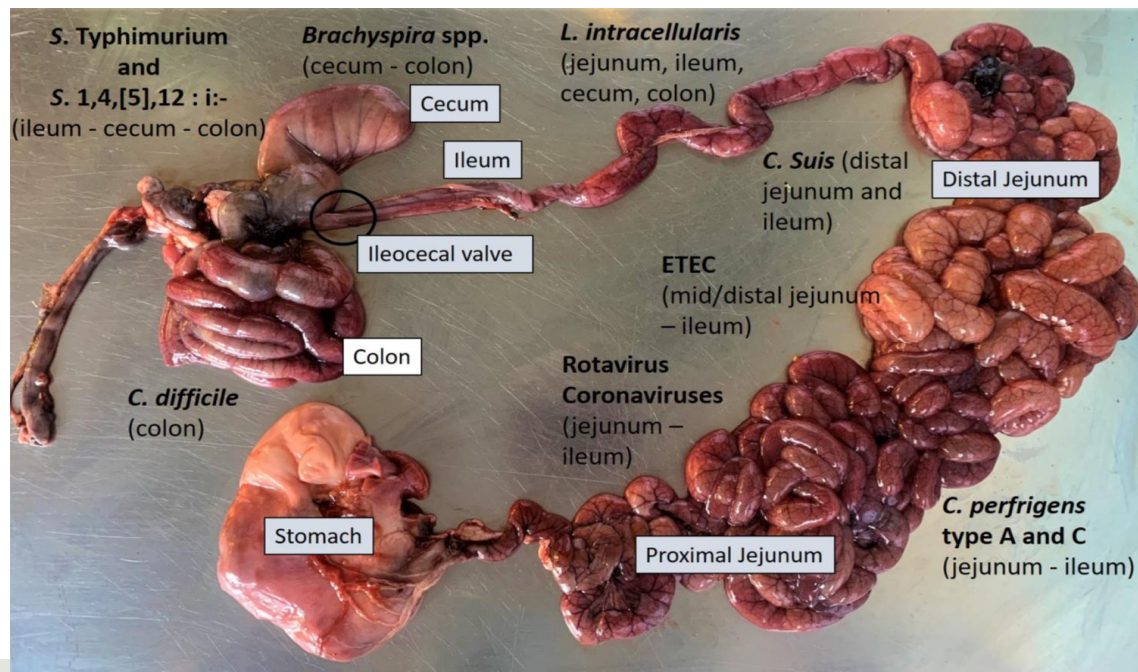
# 台灣常見豬腸道疾病

發病年齡	病名	糞便情形
哺乳期	大腸桿菌症	白痢
	梭狀桿菌	鮮紅色血痢
	流行性下痢	水樣下痢
	傳染性胃腸炎	嚴重水樣下痢
	輪狀病毒	輕度水樣下痢
	球蟲症	黏液狀下痢
保育期	沙門氏桿菌	黃色黏液便
肥育前後期及種豬	鞭蟲症	綠色軟泥便
	豬赤痢	暗紅色血痢
	增殖性腸病	黑色血痢

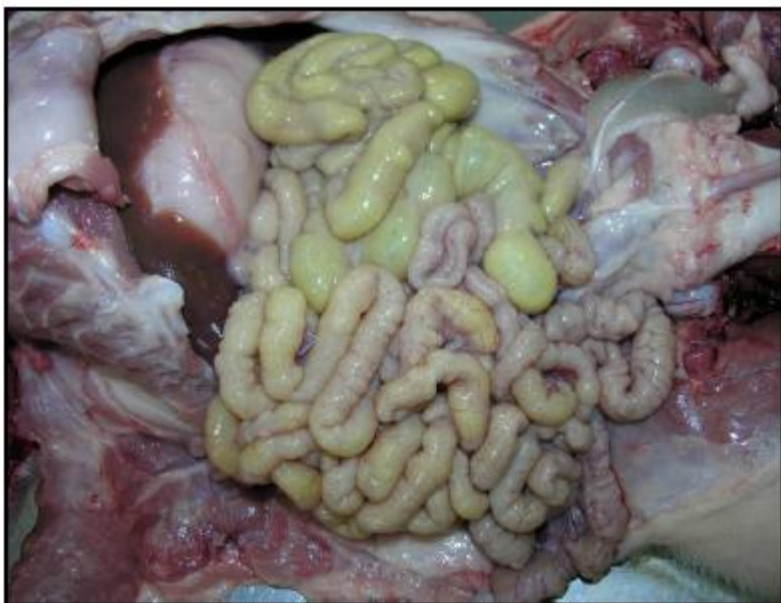


# 大腸桿菌症

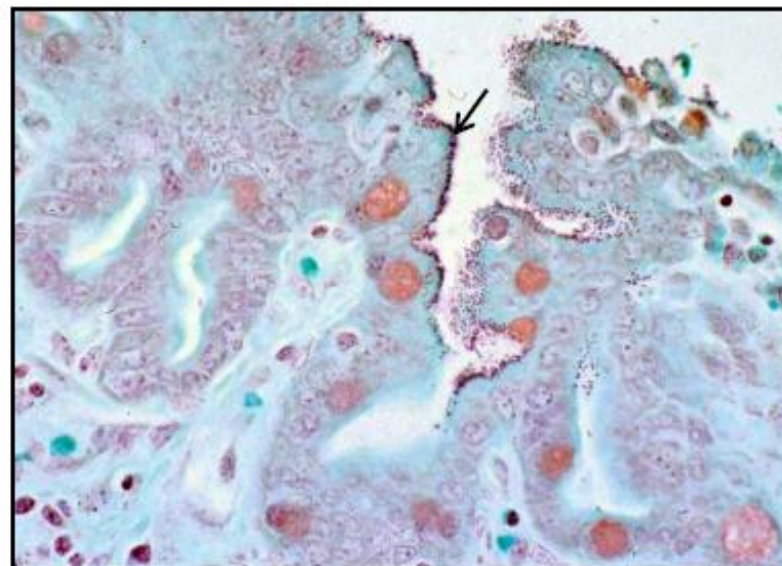
- 新母豬所生一週內小豬發生為**早發型**;二週到離乳期間發生為**遲發型大腸桿菌症**（緊迫）
- 全年會發生（尤其是四、七、十一月季節交替）
- 症狀：乳白至黃白色水樣**白痢**，脫水及酸血症而死



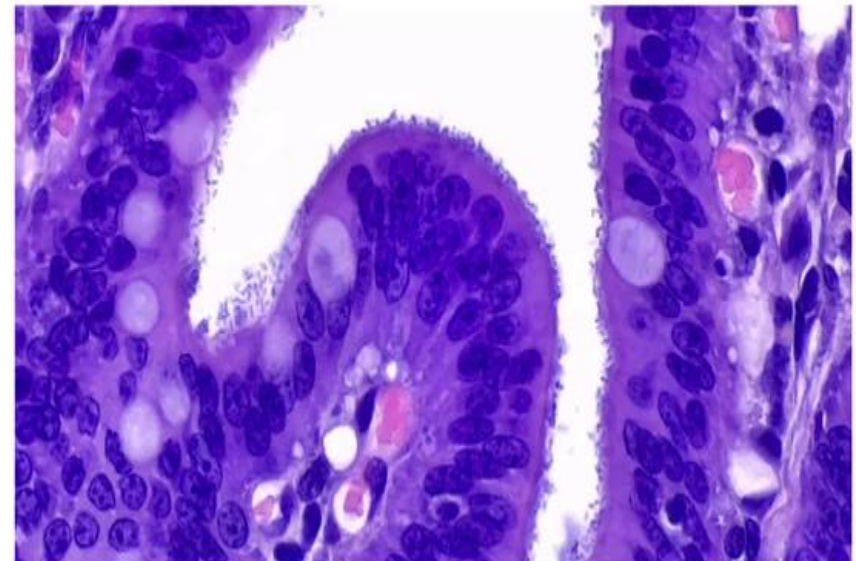
好發新生仔豬  
為腸道常在菌，因緊迫或污染增殖而感染發病



Neonatal diarrhea; colibacillosis. *Noah's arkive*







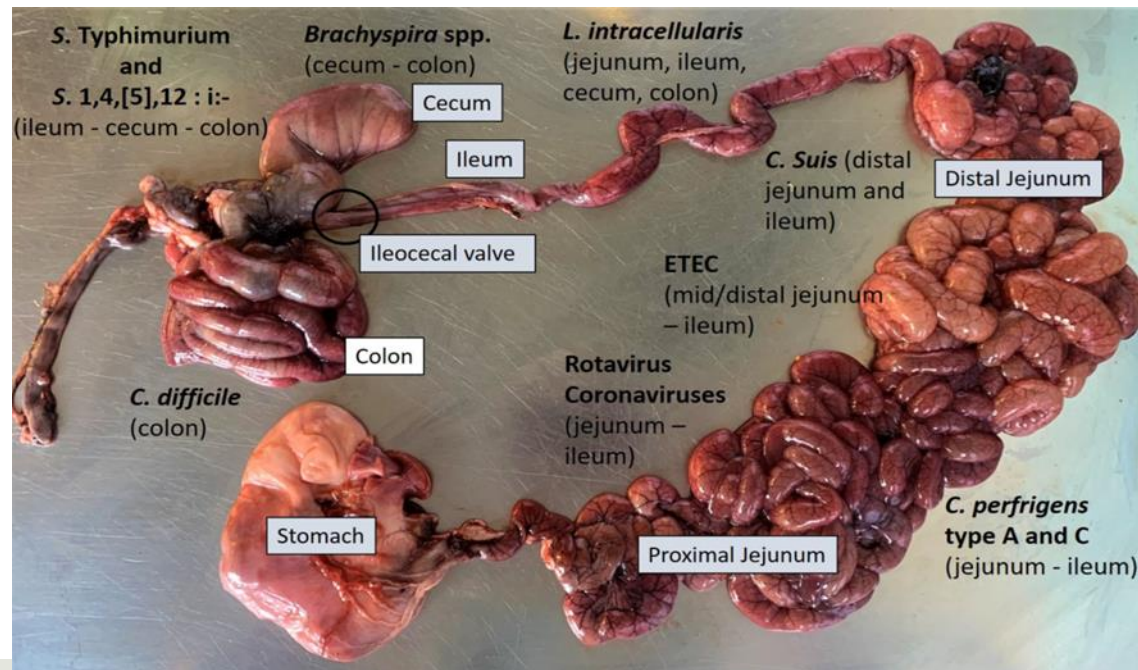
45 d/o

Colibacillosis due to F4, STa, STb ETEC strain.  
Luppi *et al.*, 2023

# 豬水腫病

## 溶血性大腸桿菌

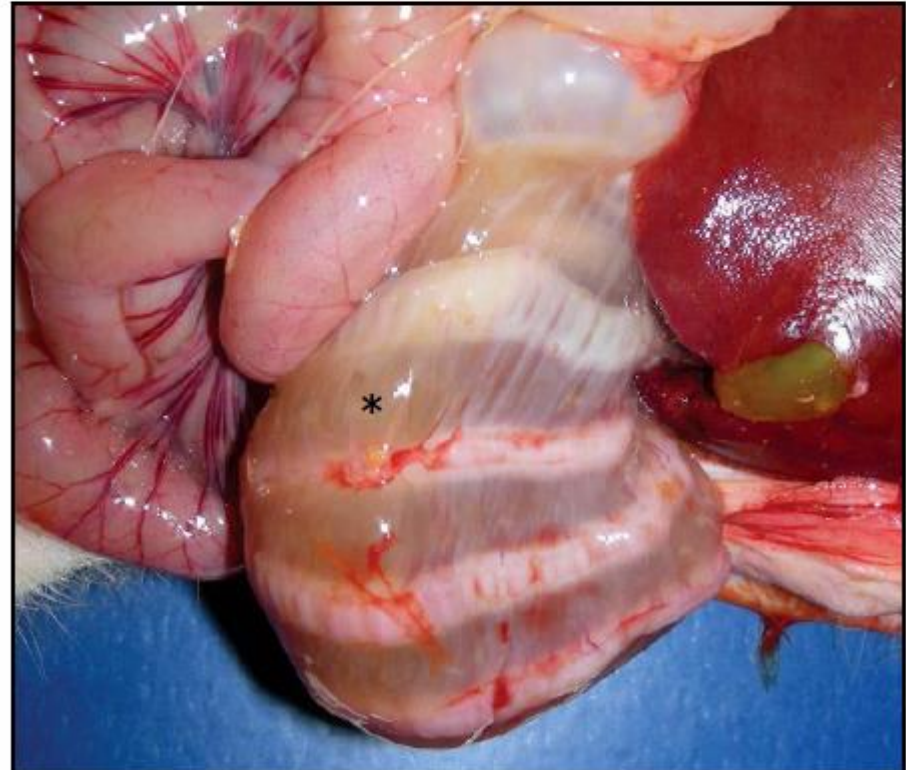
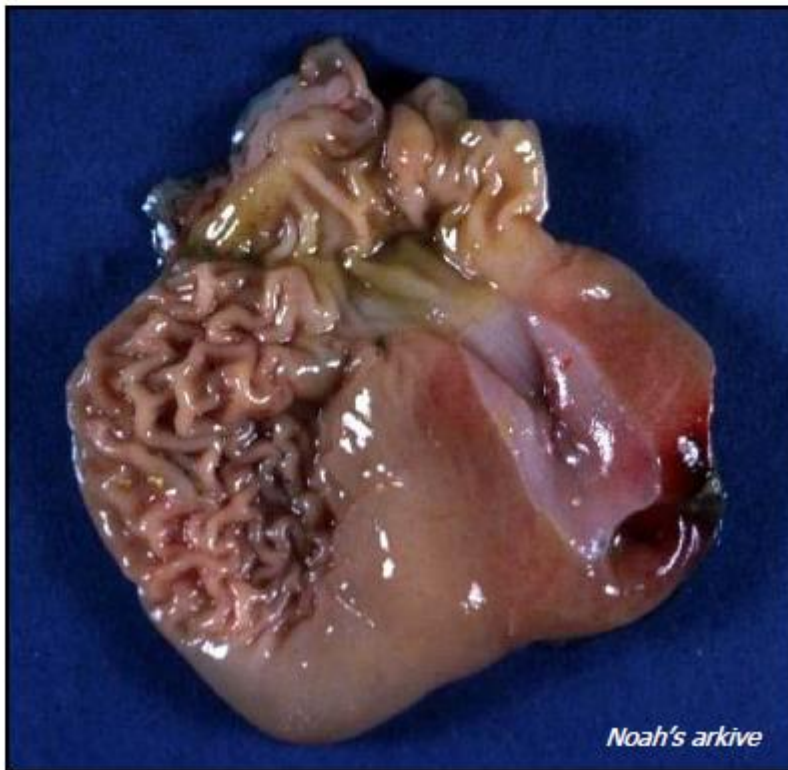
- 保育豬或剛移入肥育欄之強壯小豬
- 夏天中午好發
- 症狀：體溫升高突然死亡、眼瞼水腫、胃壁水腫、大腸漿膜面水腫



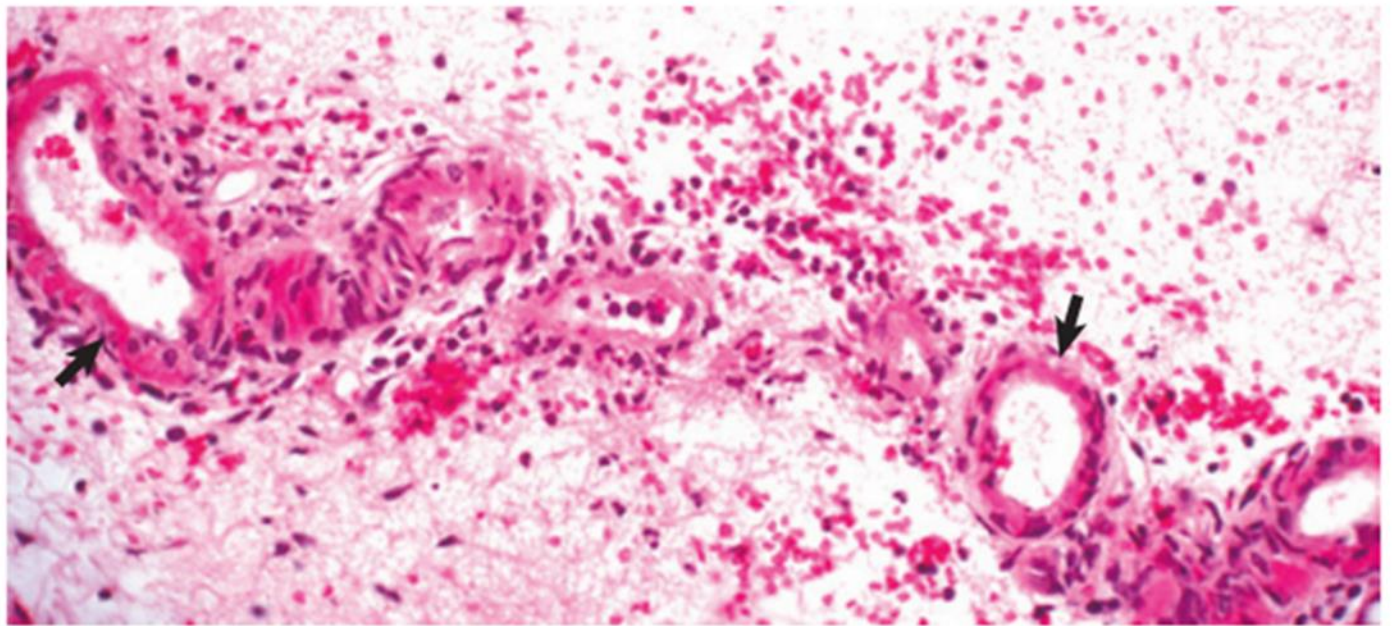


## 大腸桿菌造成全身水腫病

**Edema disease**, pig. Note edema of the eyelids, snout (top right), stomach mucosa (bottom left) and mesentery of spiral colon (\* bottom right).







**Figure 10-69 Fibrinoid Necrosis of Small Arteries, Edema Disease, Stomach, Submucosa, Pig.** Note the circumferential eosinophilic (arrows) material in the walls of the arterioles and the extensive edema and mild hemorrhage in surrounding submucosa. H&E stain. (Courtesy School of Veterinary Medicine, Purdue University.)

## Colibacillosis (neonatal and post-weaning): diagnostic tools and criteria

### Age of affected pigs:

1. Neonatal: mostly 0-4 days
2. Post-weaning: mostly 28-60 days

### Clinical signs:

- watery to a creamy diarrhoea
- white to yellow in colour
- alkaline pH

### Lesions:

- Dehydration
- Stomach with the hyperaemia of the fundus
- Small intestine: oedematous and hyperaemic with diarrhoeic content

**Sampling:** 3-5 dead/euthanized animals, rectal swabs, intestines, faeces

### Laboratory investigations

**Quantitative bacteriology:**  
haemolytic/non-haemolytic *E.coli*

Are quantitative  
criteria respected?

No

Diagnostic criteria for  
colibacillosis not respected

Yes

**Demonstration of virulence factors:**  
genes encoding for fimbriae and toxins  
by multiplex PCR

- toxins (STa, STb, LT and EAST1)
- fimbriae (F4, F5, F6, F18, F41)

- protein Eae or intimin

- Stx2e (combined with F18  
fimbriae only)

**Histopathology**

**Diagnosis of colibacillosis  
due to:**

Enterotoxigenic *E.coli* (ETEC)

Enteropathogenic *E.coli* (EPEC)

Oedema disease *E. coli* (EDEC)

**Figure 10.** Diagnostic algorithm for the diagnosis of colibacillosis.

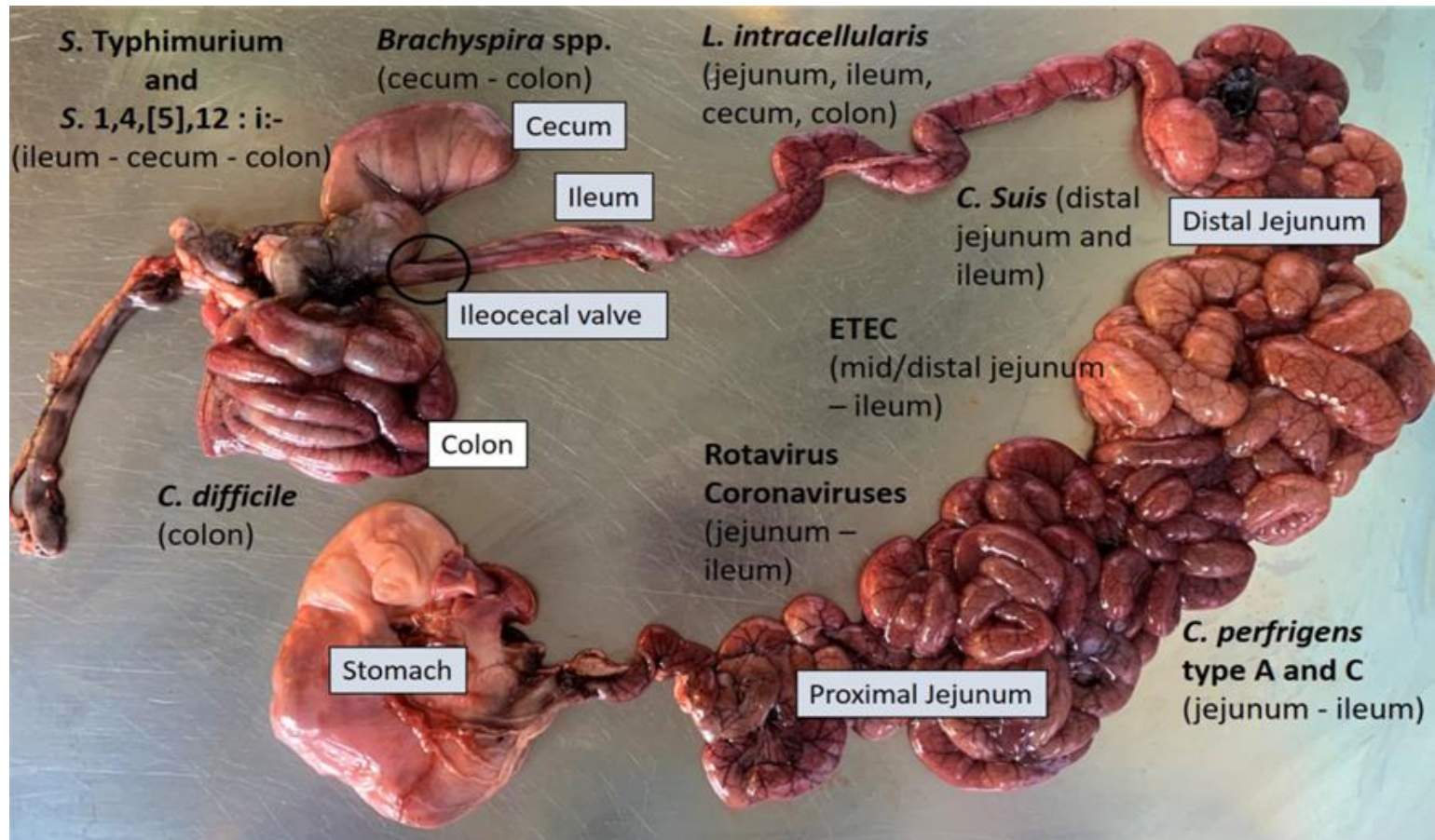
Luppi *et al.*, 2023



# 梭菌症

- 出生一週內急性出血下痢，一到兩天死亡

症狀：急性出血下痢，一到兩天死亡;耐過則生長遲緩











Dark red intestine, gas bubbles visible beneath the serosa. Lumen will be filled with bloody necrotic content. *C. perfringens* Type C



Mesocolonic edema - *C. difficile*

## Clostridiosis due to *C. perfringens* type C (acute form): diagnostic tools and criteria

### *C. perfringens* type C

- **Age of affected pigs:** neonates
- **Clinical signs:** haemorrhagic diarrhoea
- **Gross lesions:** segmental necro-haemorrhagic or fibrino-necrotic enteritis

### Laboratory investigations

#### Sampling (fresh samples)

3-5 dead/euthanized animals or intestines

faeces

#### Quantitative bacteriology

Isolation of large numbers of *C. perfringens*

Yes

No

#### Histopathology

Can further confirm the diagnosis

Genotyping of isolates:  
detection of genes encoding for CPB

Diagnosis of clostridiosis due to *C. perfringens* type C

Diagnostic criteria for clostridiosis not respected

## Clostridiosis *C. perfringens* type A: diagnostic considerations (Lack of clear criteria for definitive diagnosis)

### *C. perfringens* type A

- **Age of affected pigs:** neonates
- **Clinical signs:** non-haemorrhagic mucoid diarrhoea
- **Gross lesions:** No consistent and few inconsistent lesions

### Histopathology

**Genotyping** of isolates: detection of genes encoding for CPA and CPB2 (CPB2 detection does not contribute for the diagnosis of *C. perfringens* type A-associated enteric diseases)

- Other causes of diarrhoea excluded
- Large amount of bacilli in close contact to the enterocytes in the small intestine

Possible indication of *C. perfringens* type A involvement in the diarrhoea

### Laboratory investigations

#### Sampling (fresh samples)

3-5 dead/euthanized animals or intestines

faeces

### Quantitative bacteriology

Isolation of large numbers of *C. perfringens*

No

Diagnosis of clostridiosis excluded





困難梭菌/ *Clostridium difficile*

Luppi *et al.*, 2023

## Clostridiosis due to *C. difficile*: diagnostic tools and criteria

### *C. difficile*

- **Age of affected pigs:** 1-7 days of life
- **Clinical signs:** pasty-to-watery yellowish faeces
- **Gross lesions:** mesocolonic oedema and necro-suppurative or erosive/ulcerative colitis and typhlocolitis

PCR for Toxinotyping:  
detection of genes encoding  
for TcdA and/or TcdB

Yes

No

### Laboratory investigations

#### Sampling (fresh samples)

3-5 dead/euthanized animals or intestines

Faeces

OR

Faeces

Bacteriology

Enzyme immunoassays

*C. difficile* isolation

Detection of TcdA and/or TcdB

Yes

No

No

Yes

Diagnostic criteria for  
CDAD not respected

Histopathology: are there characteristic lesions in colonic mucosa?

Diagnosis of CDAD  
confirmed

Yes

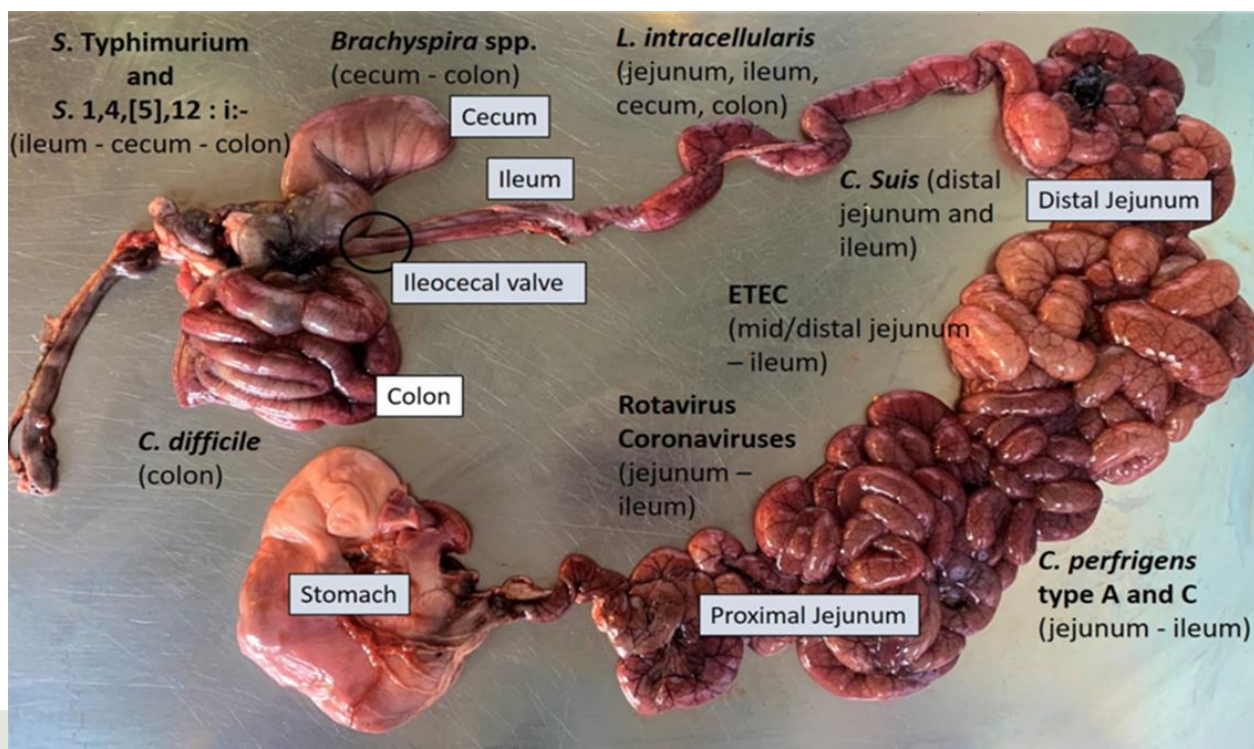
No

Diagnostic criteria for  
CDAD not respected

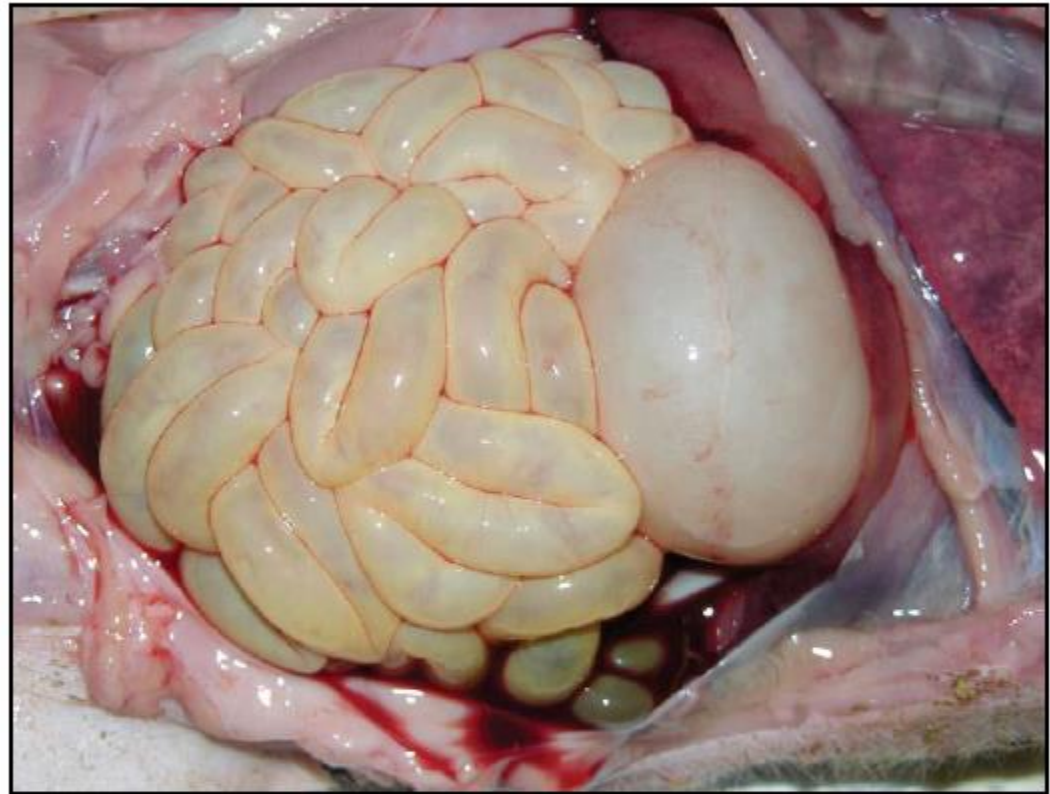


# 冠狀病毒病毒性下痢

- transmissible gastroenteritis virus (TGEV) 豬傳染性胃腸炎病毒
- porcine epidemic diarrhoea virus (PEDV) 豬流行性下痢病毒
- porcine deltacoronavirus (PDCoV) 豬δ冠狀病毒
- swine acute diarrhoea syndrome coronavirus (SADS-CoV) 豬急性下痢綜合症冠狀病毒



- **Transmissible gastro-enteritis (TGE)**
  - **Coronavirus** infection
  - Highly contagious & high mortality in pigs < 14 days old
  - Severe **villous atrophy**
- **Others**
  - Porcine epidemic diarrhea
  - Porcine **rotavirus**



**TGE**, small intestine, piglet. The small intestine is dilated by gas, is thin walled, and contains undigested milk.

## 冠狀病毒病毒性下痢：傳染性胃腸炎 (TGE)

- 症狀：嘔吐及下痢、脫水，發病一週齡之內小豬高致死，其他年齡豬隻短暫下痢，不致死
- 好發冬季，但四季皆可發生
- 病變：空迴腸絨毛萎縮



Gaunt dehydrated piglets.



Vomiting sow.

# 冠狀病毒病毒性下痢：豬流行性下痢(PED)

## ■ 各年齡發生嘔吐下痢

1. **舊型**：初春入夏發生，**離乳後**小豬發生，小豬死亡率低 (0-5%)
2. **新型 (2013)**: 全年度發生，**新生**小豬高死亡率

## ■ 症狀：嘔吐及下痢、脫水

## ■ 病變：空迴腸絨毛萎縮



## 新型 P E D 在台灣之爆發

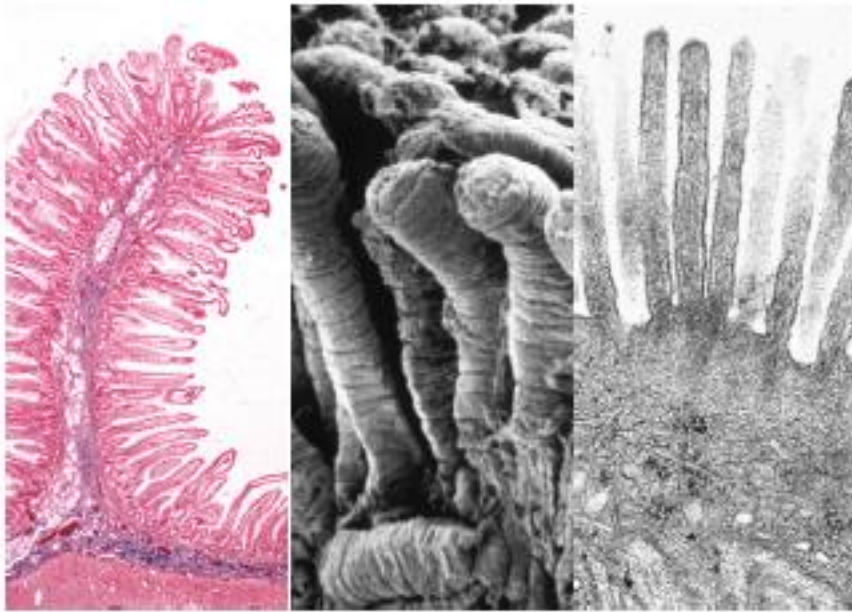
New variants of PEDV, which emerged in Taiwan in late 2013, have caused **a high morbidity and mortality in neonatal piglets!**



**"豬下痢"疫情燒 全台小豬死30萬頭**

# INTESTINE

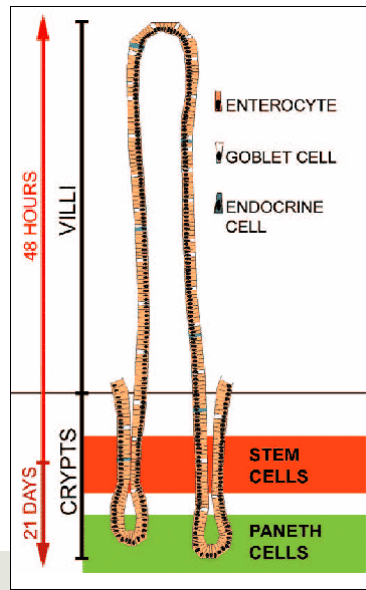
## Small & Large Intestines Structure



- Long coiled tube, large surface area
- Folded mucosa
- Villi (7-14 fold increase)
- Microvilli (15-40 fold increase)

### Functions

- Digestion, absorption, excretion
- Fermentation vat (cecum)
- Good defense mechanisms

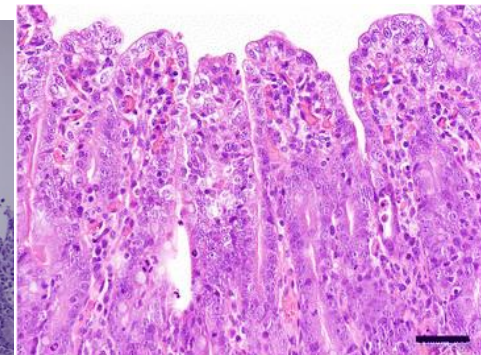
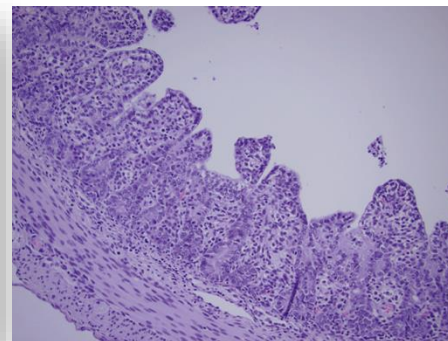


In 3-week-old pigs the turnover rate is 2 to 3 days.

In neonatal pigs, the turnover rate is 7 to 10 days!

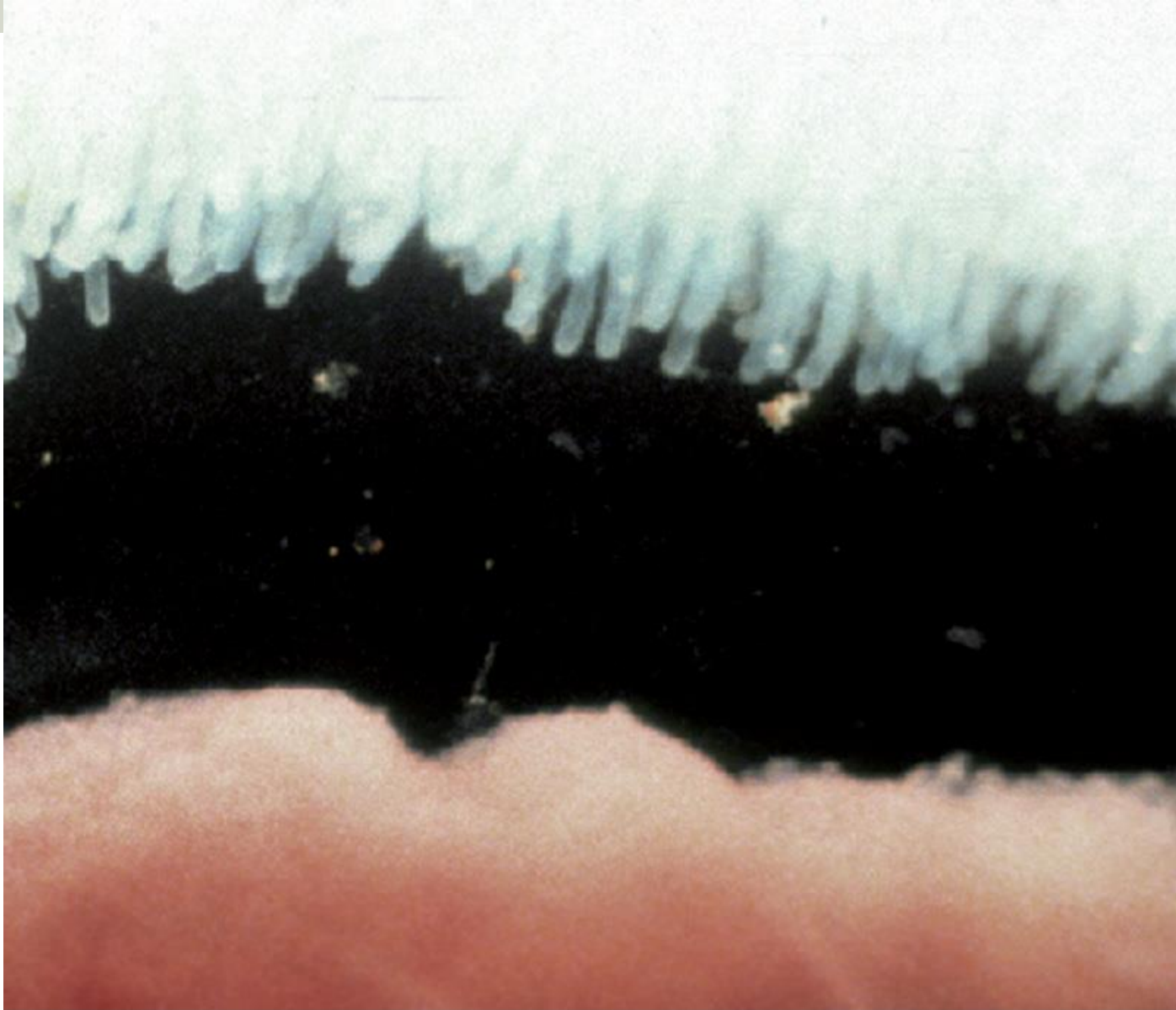
# New Variant PEDVs

Age	All age, especially <b>in suckling piglets</b> .
Clinical signs	Watery diarrhea, piglets may <b>die</b> from dehydration
Gross lesions	1. Small intestine is distended with yellow, foamy fluid, and the wall is thin and transparent 2. Stomach is distended with curdled milk
Microscopic lesions	1. Villous height : crypt depth ratio reduction 2. Cell exfoliation



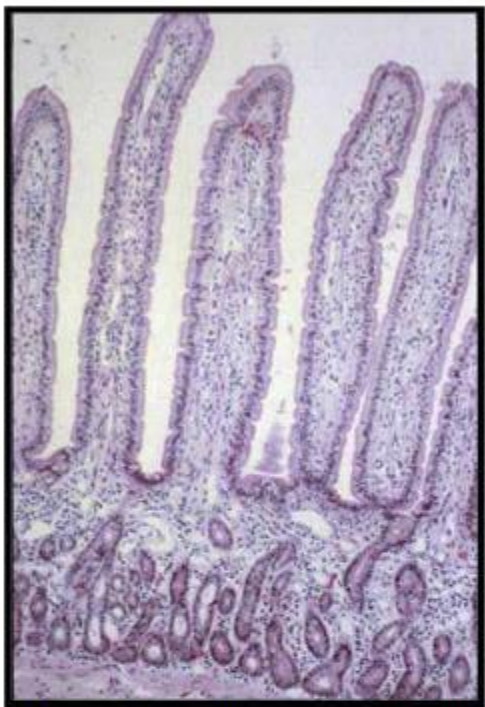
(Jung and Saif, 2015; Straw et al., 2006)



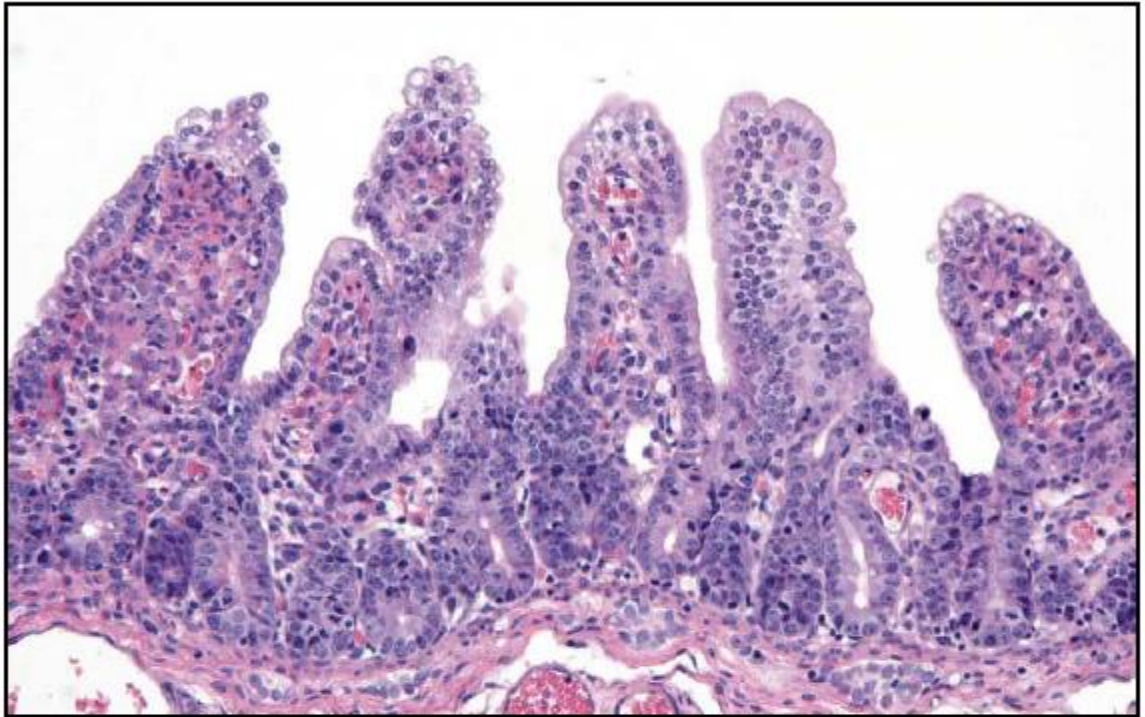


(Courtesy Dr. H. Gelberg, College of Veterinary Medicine, Oregon State University.)  
Zachary and McGavin: Pathologic Basis of Veterinary Disease, 5<sup>th</sup> edition.  
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**Wet mount, intestinal villi, transmissible gastroenteritis, small intestine, piglet.** There is notable villous atrophy(*bottom*) compared with normal intestine (*top*)

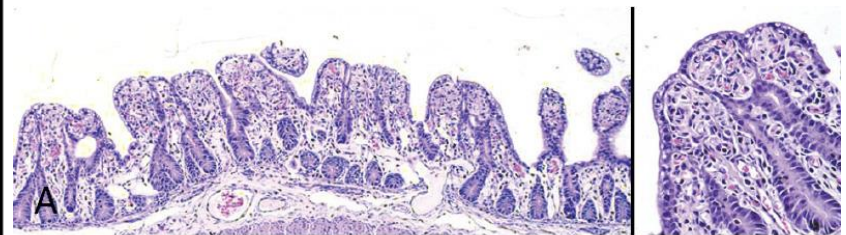
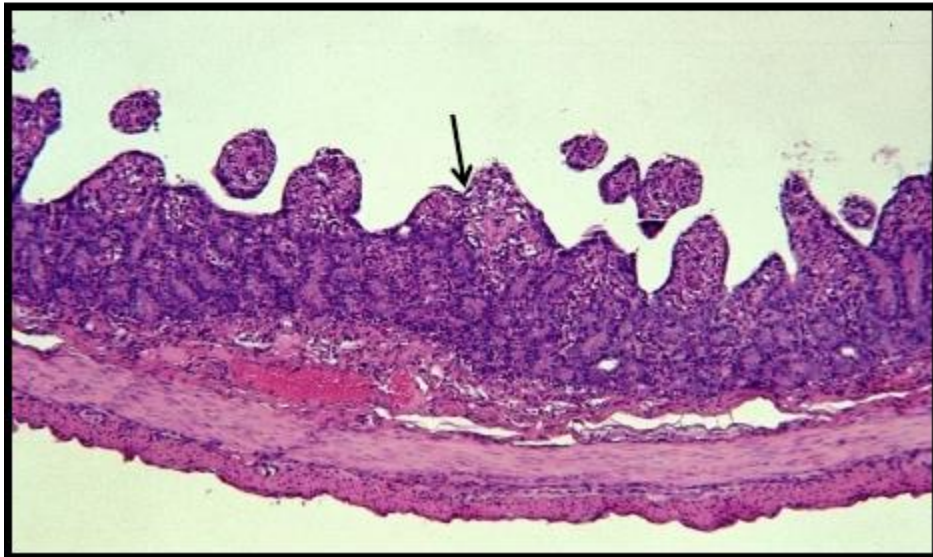


Normal length intestinal villi



**Rotavirus enteritis, jejunum, piglet.** There is notable blunting and fusion of intestinal villi secondary to virus-induced cytolysis of enterocytes covering the tips and sides of intestinal villi.

*Pathologic Basis of Veterinary Disease, 5<sup>th</sup>ed., Mosby-Elsevier*



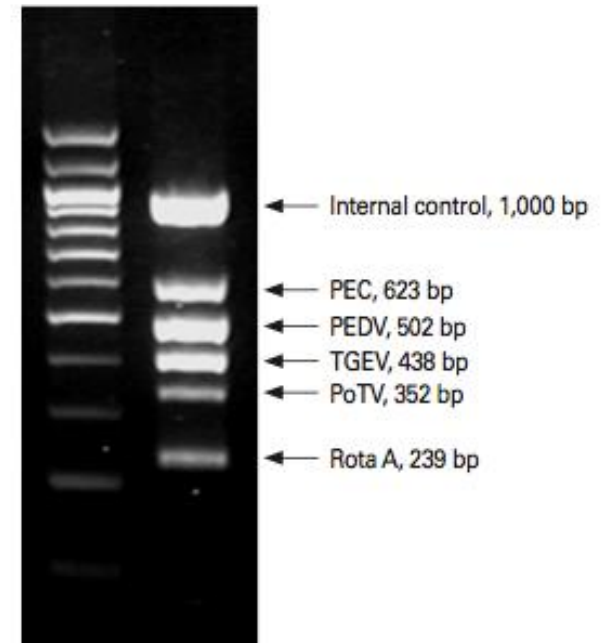
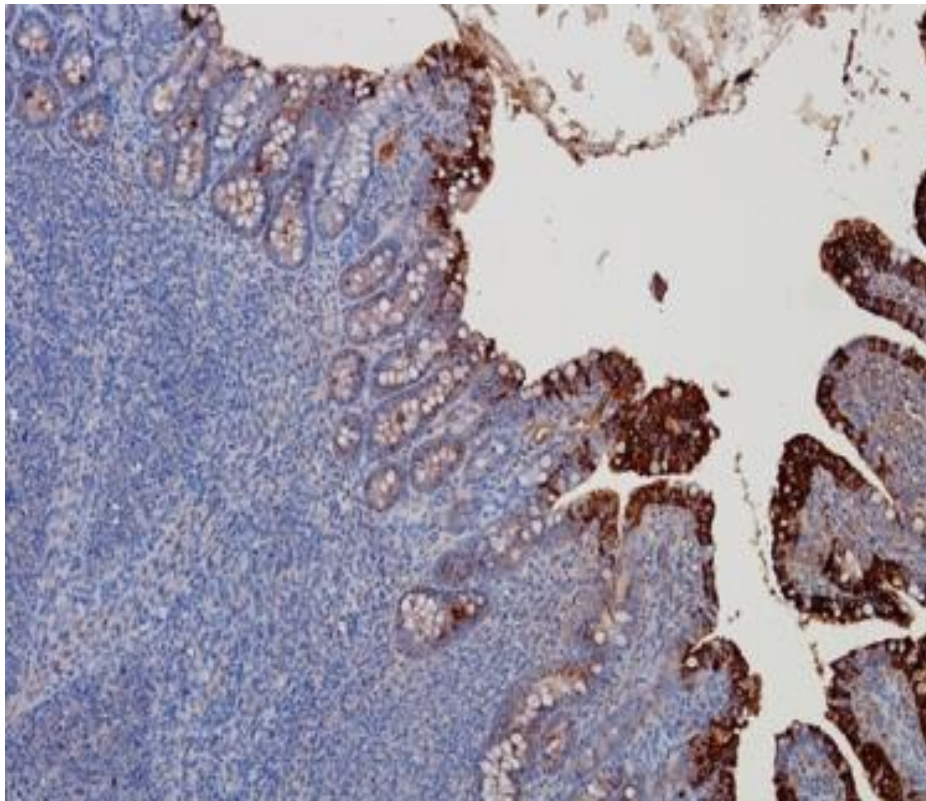
(Courtesy Dr. B.G. Harmon, College of Veterinary Medicine, The University of Georgia and Noah's Arkive, College of Veterinary Medicine, The University of Georgia.)  
Zachary and McGavin: Pathologic Basis of Veterinary Disease, 5<sup>th</sup> edition.  
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**TGE, small intestine, piglet.** Marked villous atrophy & fusion (arrow).

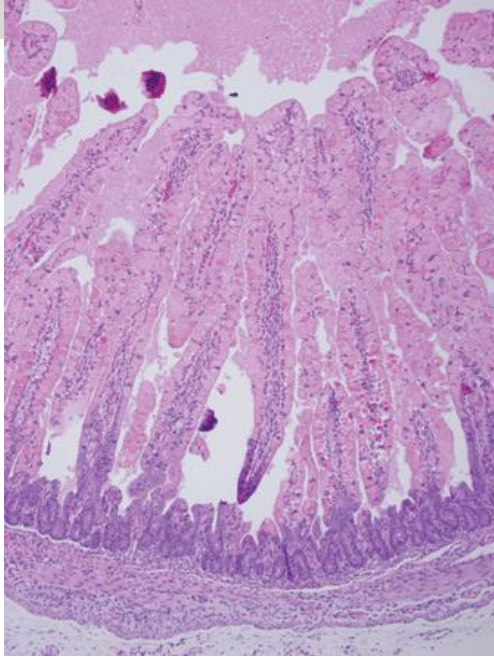


RT-PCR or real time RT-PCR: Detect PEDV genetic material from feces, oral fluid, environment and feed

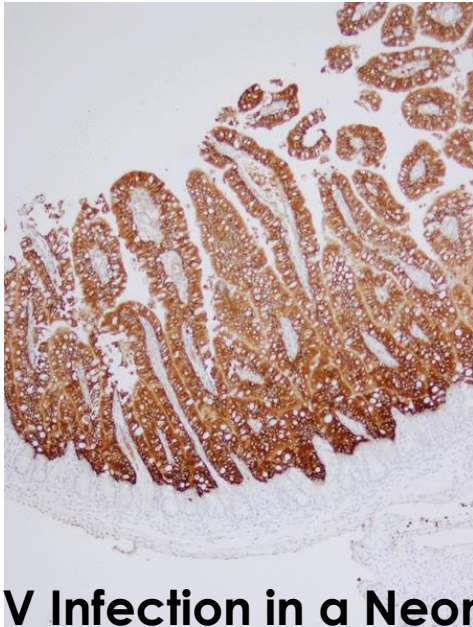
IHC: antibodies to detect PEDV antigen



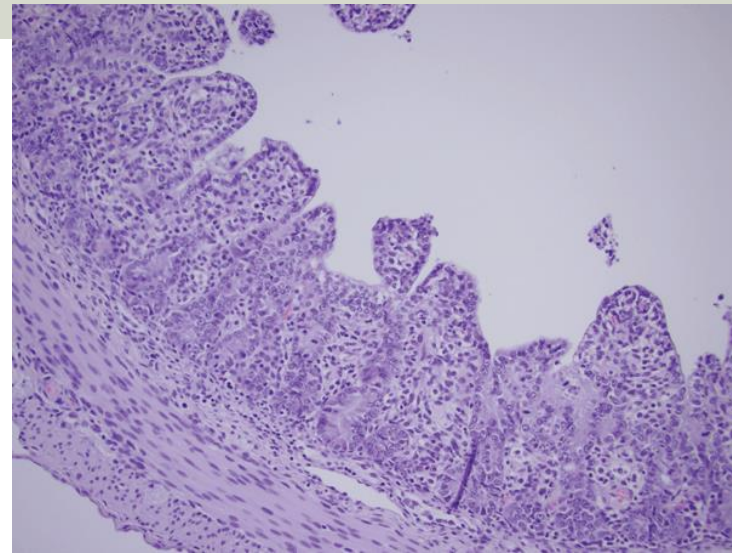




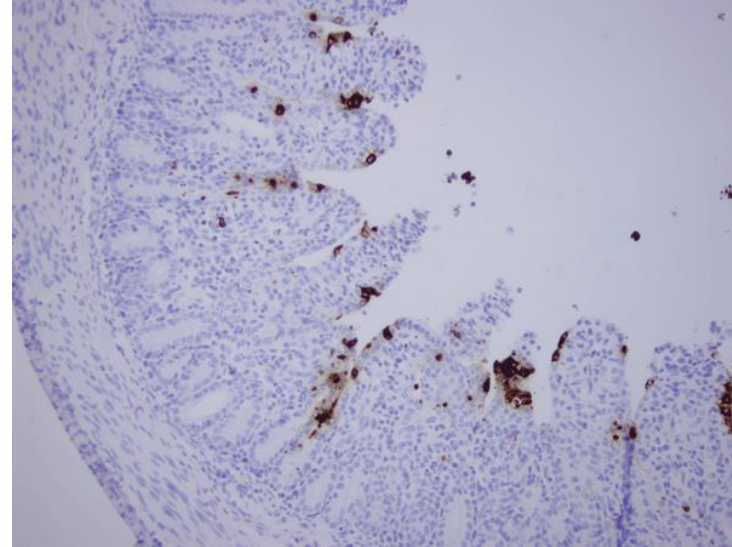
**Intestinal Villi from Normal Neonatal Pig**



**Early PEDV Infection in a Neonatal Pig**



**Severely Damaged Neonatal Pig Gut Post-PEDV Infection**

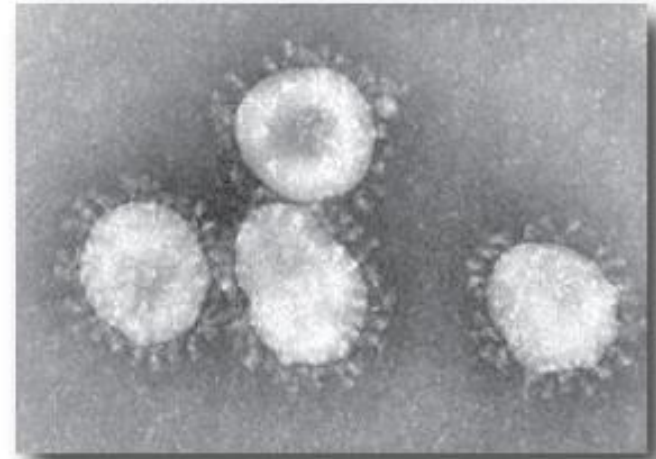
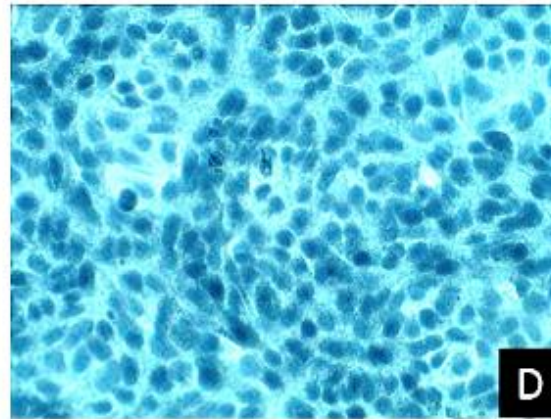
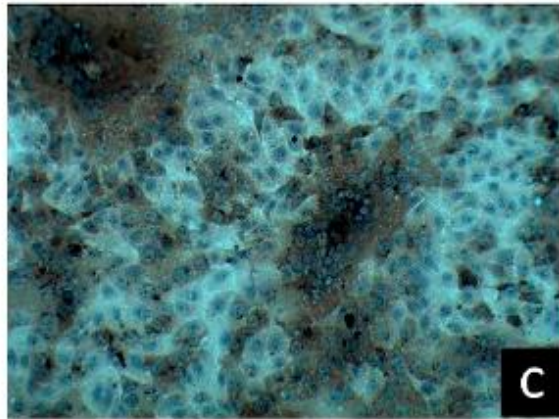
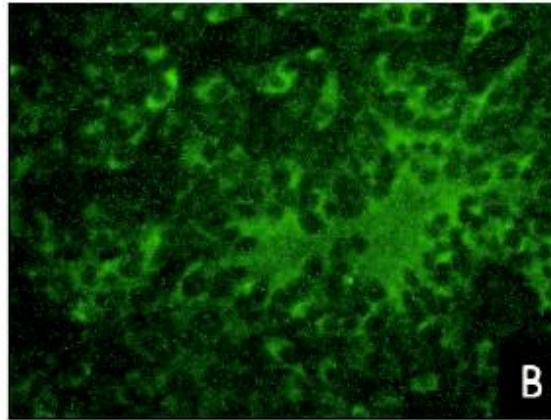
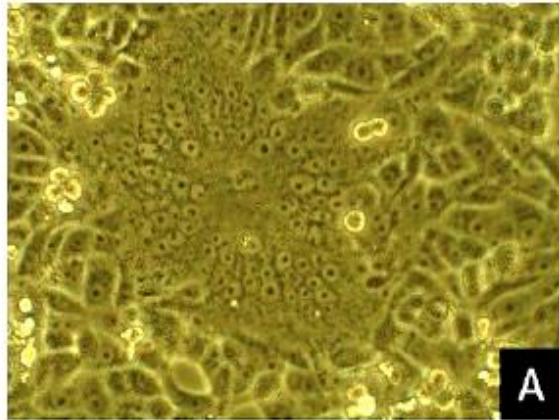


**Neonatal Pig 36 Hours After PEDV Infection**

<https://www.aasv.org/pedv/Conceptsforherdexposure121713.pdf>

# 診斷

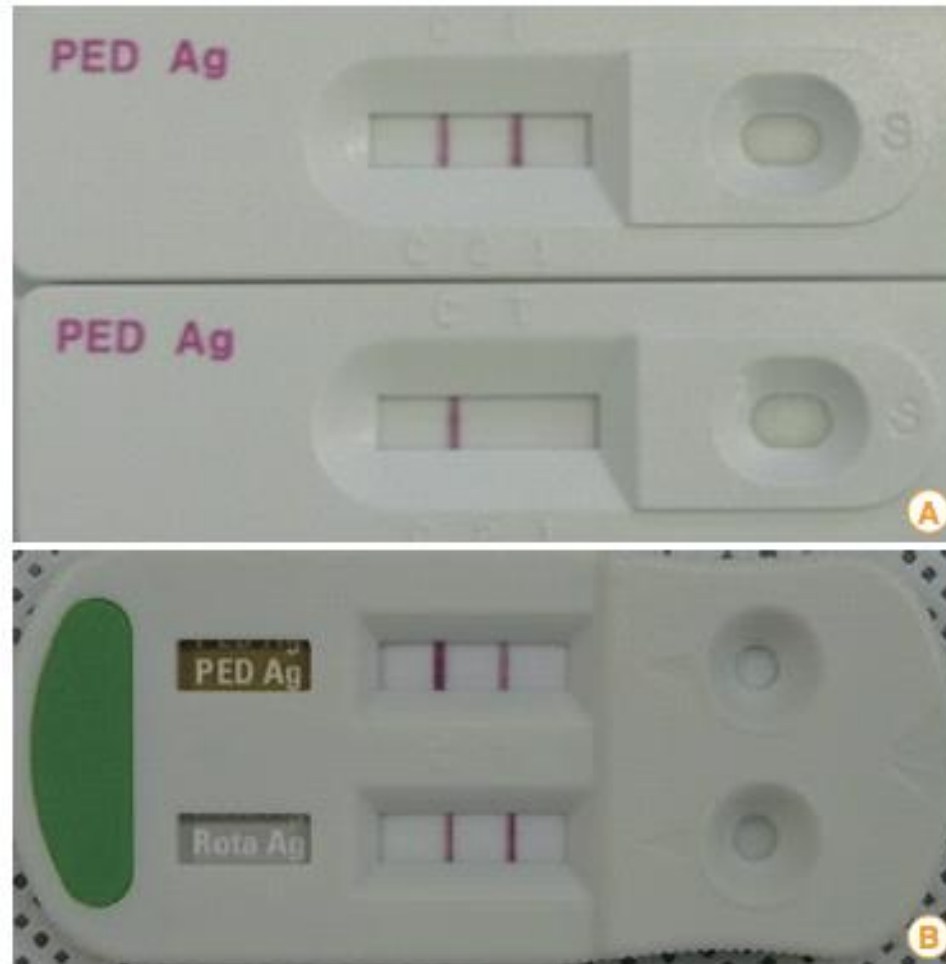
Viral isolation, ICC, IFA, TEM



<http://humanviruses.org/wp-content/uploads/2014/01/Coronaviridae-Cov-1-15-14.png>

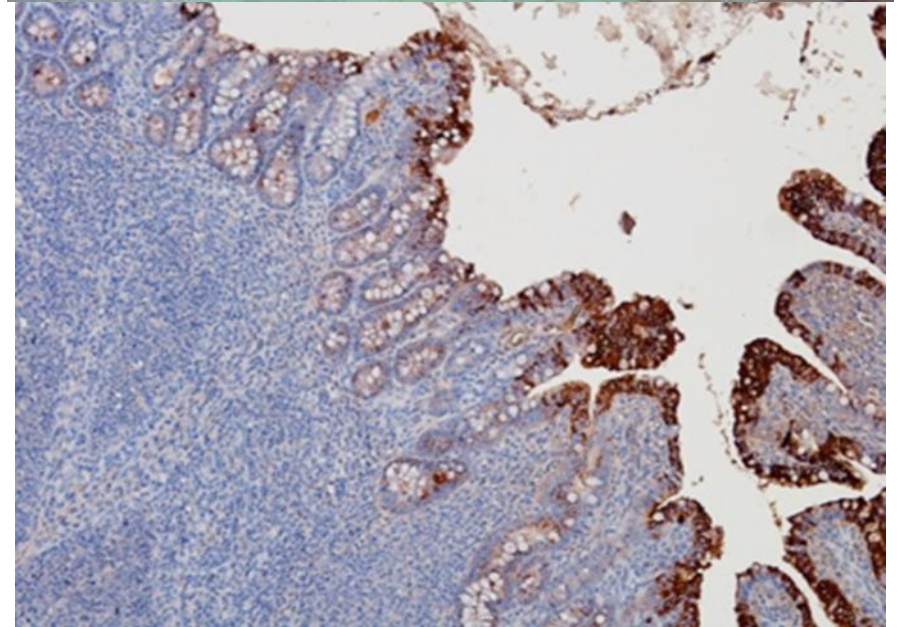


# 診斷



**Fig. 3.** Results of an immunochromatographic assay kit that can be used for porcine epidemic diarrhea virus (PEDV) detection. (A) The upper and lower panels show positive and negative results, respectively. (B) Dual-detecting immunochromatographic kit for the detection of PEDV and porcine rotavirus.





病變：小腸絨毛萎縮，充滿氣體及黃色水樣內容

免疫組織化學染色可見病毒抗原於萎縮之絨毛上皮細胞





## Rotavirus: diagnostic tools and criteria

### Clinical signs

- Profuse yellow-white watery diarrhoea, with undigested milk
- Lethargy
- Vomiting
- Anorexia
- Poor average daily gain
- Weight loss

### Gross lesions

- Dilation of small intestine
- Watery, yellow, or grey contents of small intestine
- Intestinal walls are thin
- Stomach containing undigested milk

### Laboratory investigations

3-5 recently dead/euthanized pigs or intestines



Detection of rotavirus by PCR assays (screening method)



Histopathology (confirmation method)

Detection of characteristic microscopic lesions?

No



Diagnosis of Rotavirus  
not confirmed

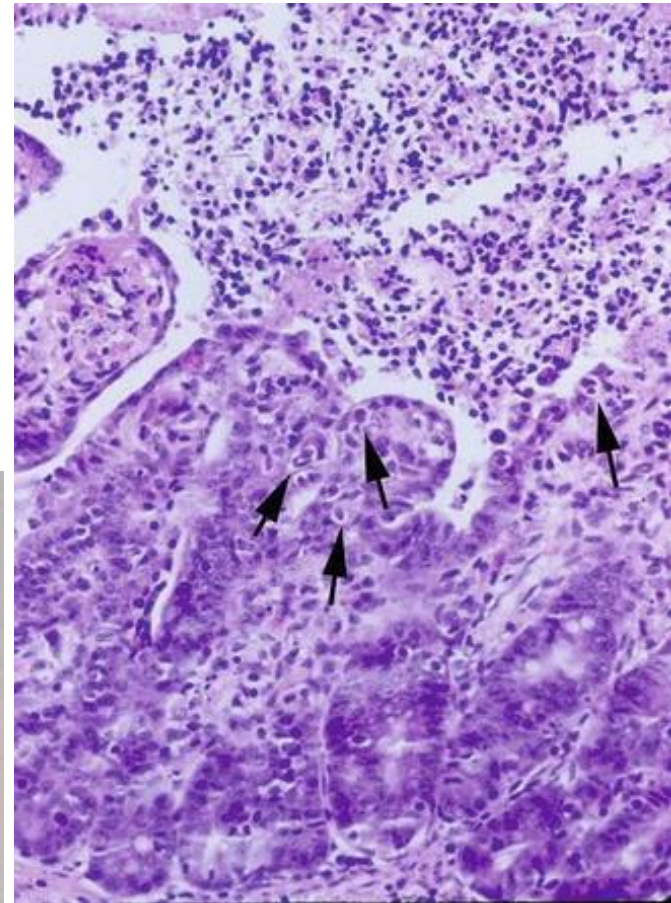
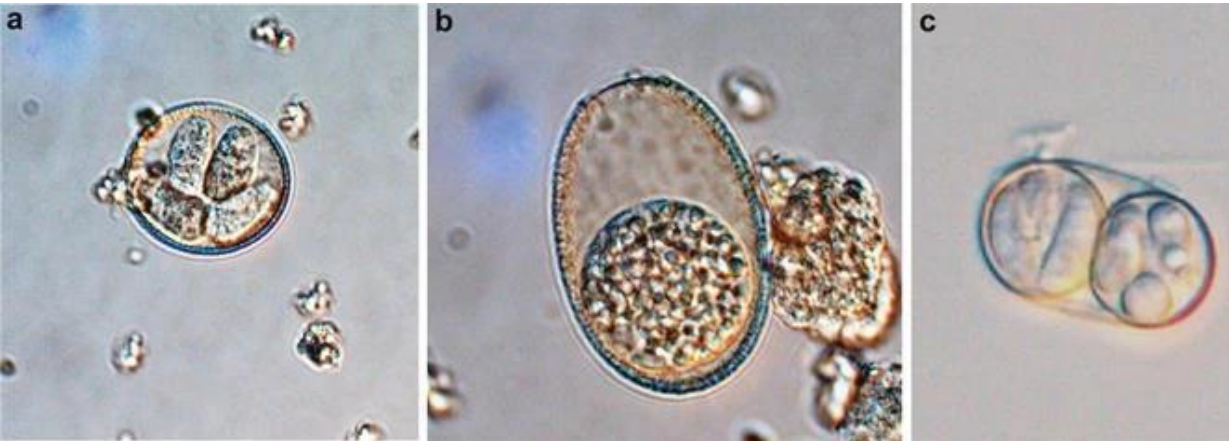
Yes



Suggestive of Rotavirus



# 豬球蟲症 *Cystoisospora* (syn. *Isospora*) *suis*



(a) *Eimeria perminuta*

(b) *Eimeria scabra*

(c) *Cystoisospora suis*



Post-weaned Piglet

Kanamori *et al.*, 2018



## *C. suis*

**Age of affected pigs:** second week of life

**Clinical signs:** yellowish-grey and creamy to liquid faeces

**Gross lesions:** haemorrhagic or non-haemorrhagic enteritis, involving jejunum and ileum

Histopathology

## Coccidiosis: diagnostic tools and criteria

Laboratory investigations

Multiple sampling of faeces/intestinal content (e.g. 7, 14 and 21 days of age)

Pasty faecal samples are likely to contain more oocysts than liquid samples

Flotation  
(store faeces at +4°C  
do not freeze)

Different PCR assays available

Autofluorescence

Staining protocols

Luppi *et al.*, 2023



# 沙門氏桿菌症

- 腸炎型：斷奶後保育豬 (*S. Typhimurium*)**

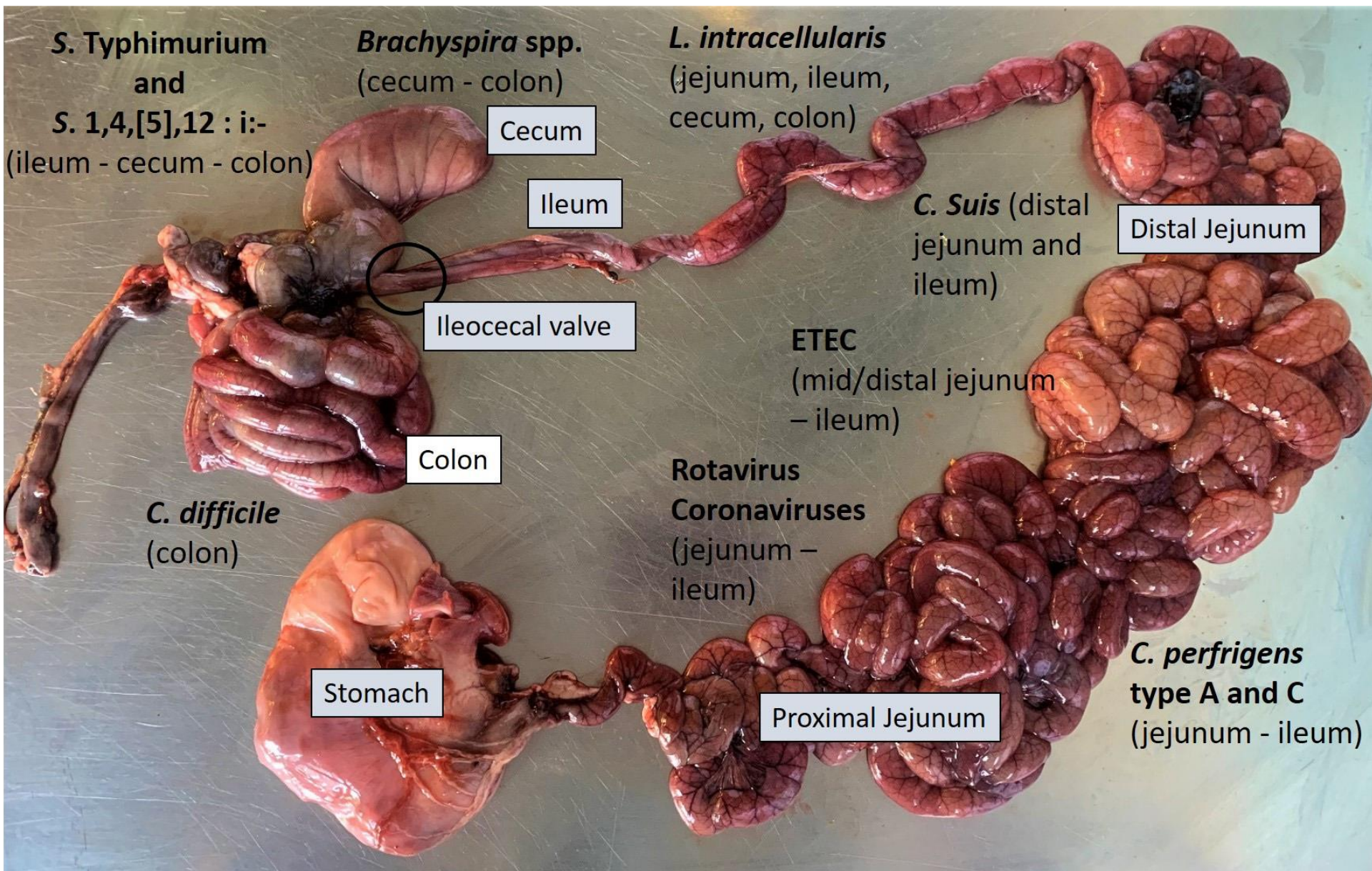
- 症狀：黃色下痢，高發生低死亡，發育不良、皮毛粗糙、石頭豬、鈕扣狀潰瘍

- 全年會發生（尤其是四、七、十一月季節交替）

- 症狀：乳白至黃白色水樣**白痢**，脫水及酸血症而死

- 敗血型：三到四月齡肥育豬 (*S. Cholerasuis*)**

- 症狀：突然發燒、耳翼發紺、死亡、低發生率高死亡率、肝臟多發白點、腸梗塞







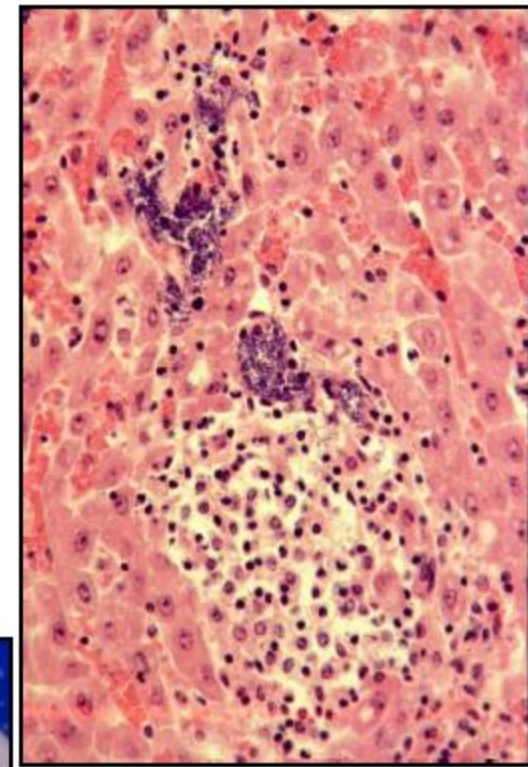
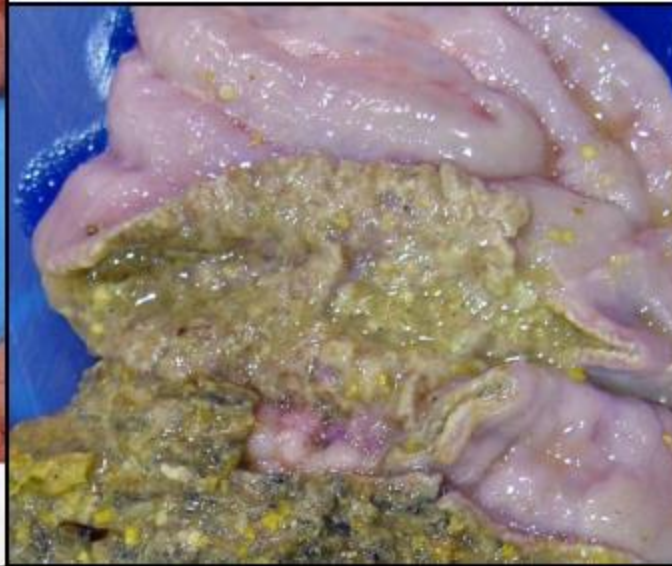
**Fibrinous enteritis with involvement of **colon** and **small intestine** in pigs infected with *S. Typhimurium*.**



# Salmonellosis

## ■ Acute form

- Fibrinonecrotic enterocolitis, necrosis of Peyer's patches & mesenteric lymphadenopathy
- Multifocal hepatitis (paratyphoid nodules) **hyperplasia of Kupffer cells**



Paratyphoid nodule (p) with intralesional bacteria (arrow) *S. typhimurium*, liver, cow.

**Acute salmonellosis.** Yellow-brown intaluminal fibrinous cast, bovine (left) & fibrinonecrotic pseudomembranes in spiral colon, pig (right).



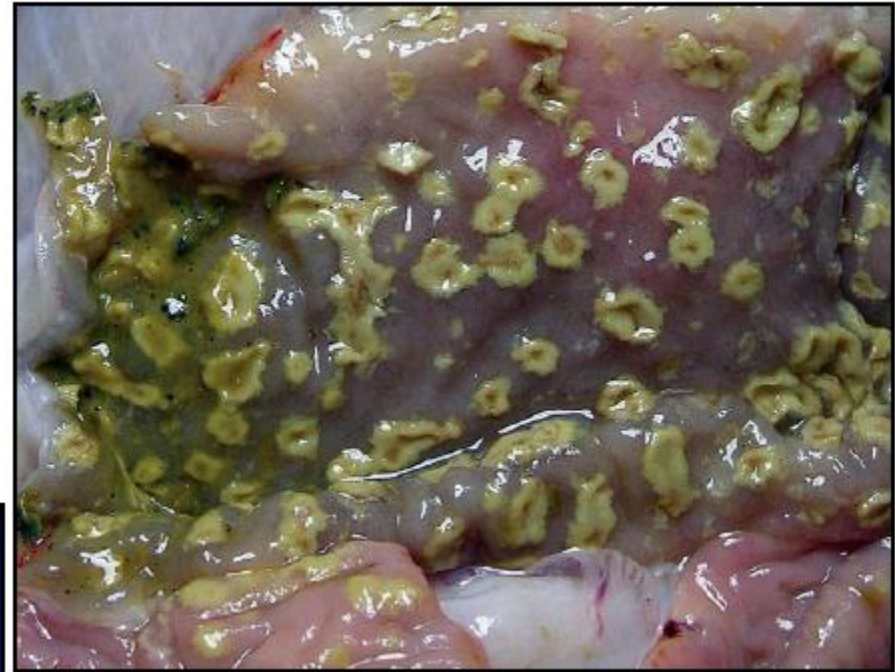
# Salmonellosis

## ■ Chronic form

- Vasculitis → thrombosis  
→ infarct → button ulcers
- Ulcerative enterocolitis & proctitis
- Rectal strictures & obstruction



**Rectal stricture and megacolon in pigs.** Marked dilation of the colon (bottom right) is due to rectal stricture (left) secondary to ulcerative proctitis, ischemia and granulation tissue formation.



**Button ulcers (arrows), colon, pig.** These lesions are focal infarcts due to chronic salmonellosis.



**Chronic enteric salmonellosis, colon, pig.** Multiple foci of mucosal necrosis (*arrow*) are termed *button ulcers* and are pathognomonic for chronic enteric salmonellosis



(Courtesy Dr. M.D. McGavin, College of Veterinary Medicine, University of Tennessee.)  
Zachary and McGavin: Pathologic Basis of Veterinary Disease, 5<sup>th</sup> edition.  
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# Salmonellosis

## ■ Peracute/septicemic form

- *S. choleraesuis*
- Widespread petechial hemorrhages, DIC
- Fibrinoid necrosis of blood vessels → thrombosis → ischemia, cyanosis
- Fibrinous polyserositis

**Septicemic salmonellosis.** Blue-red discoloration of extremities.



**Peracute to acute salmonellosis, colon, horse.** Serosal surfaces. Note the areas of hemorrhage and necrosis affecting multiple sacculations. This pattern is consistent with colonic infarcts.

## Enteric salmonellosis: diagnostic tools and criteria

### *S. Typhimurium* and its monophasic variant *S. 1,4,[5],12:i:-*

- **Age of affected pigs:** mostly in growing period
- **Clinical signs:** fever, yellow watery diarrhoea that may contain blood and mucus
- **Gross lesions:** necrotic enterotyphlocolitis with diphtheritic membrane on the mucosal surface

#### Laboratory investigations

Sampling of faeces/intestines/mesenteric lymph nodes



Bacteriology (using selective media with or without enrichment)



Serotyping

Isolation of *Salmonella* spp.

No

Diagnosis of salmonellosis not confirmed

Is the isolation supported by the detection of clinical signs and appropriate lesions?

Yes

Diagnosis of salmonellosis confirmed

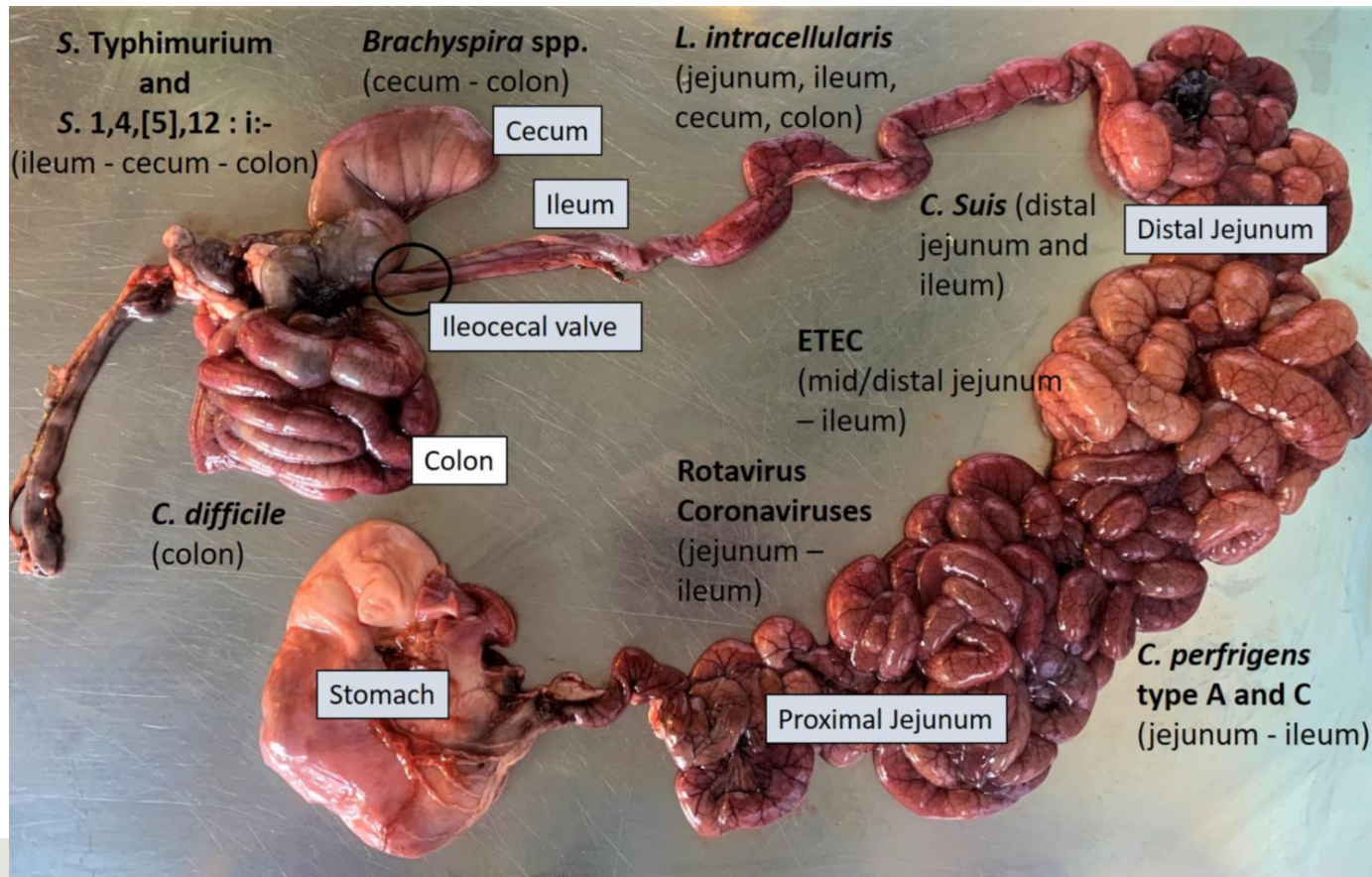
Histopathology



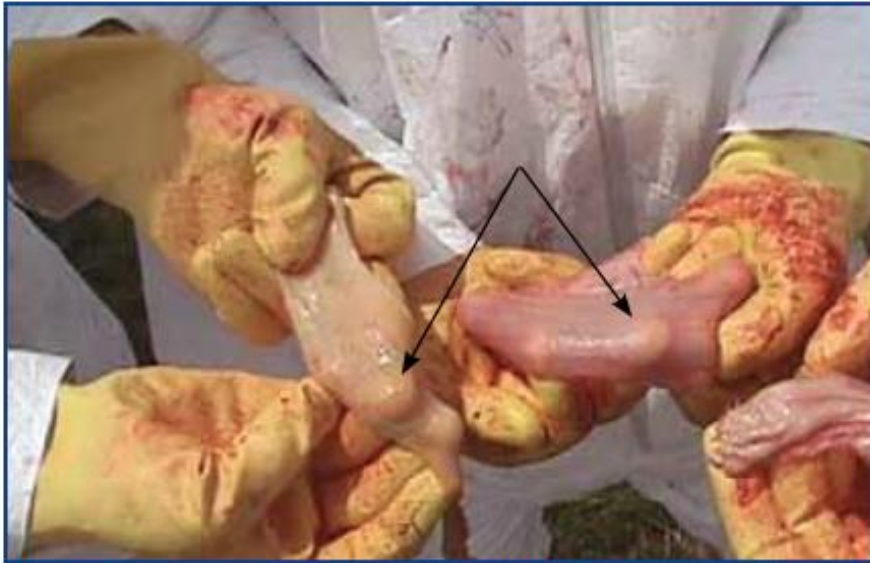
# 增殖性腸病：羅生氏菌

## *Lawsonia intracellularis*

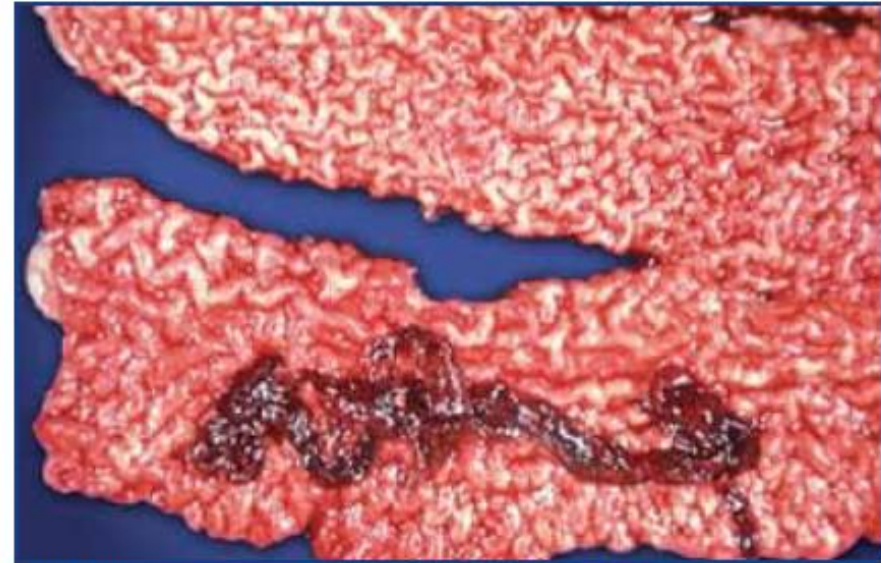
- 發生在肉豬
- 症狀：黑色瀝青血液便，全身蒼白無血色，四肢無力，小腸後段至肛門成腦迴樣增厚



## 增殖性腸病：羅生氏菌



Normal intestine - can see fingers through lining



Thick hyperplastic ileal mucosa with blood clot in lumen.



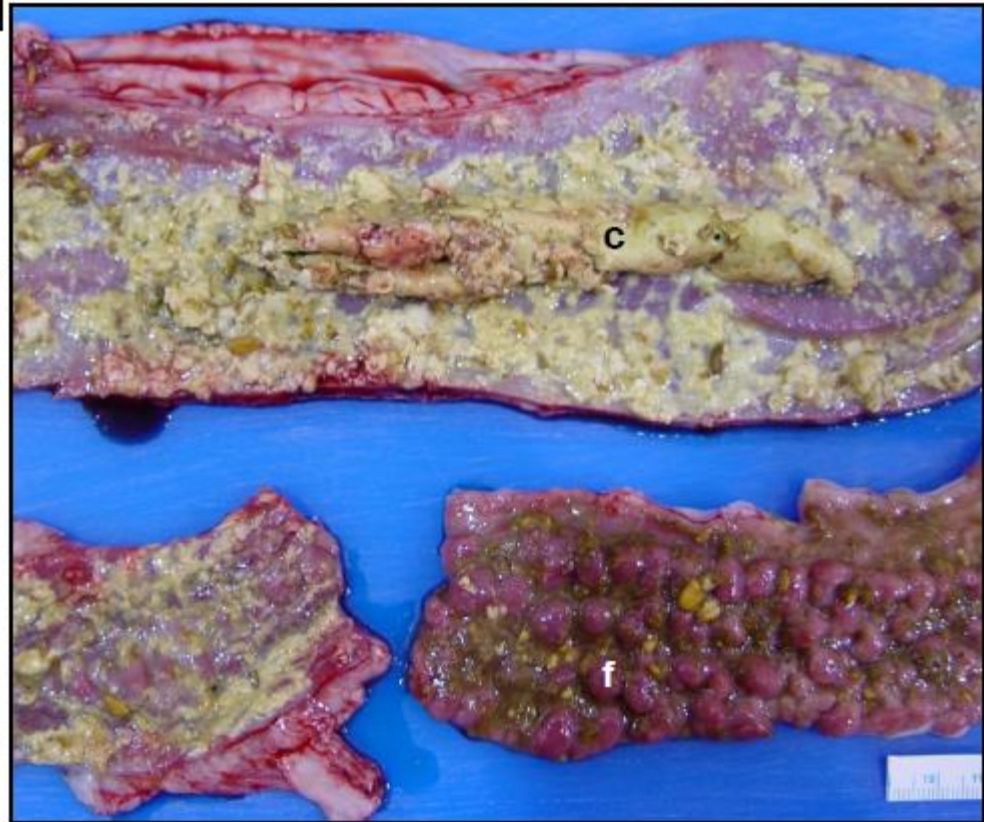




**Lawsonia enteritis**, ileum, pig. Notice the corrugated cobblestone appearance of intestinal serosa.

增殖性腸病：羅生氏菌

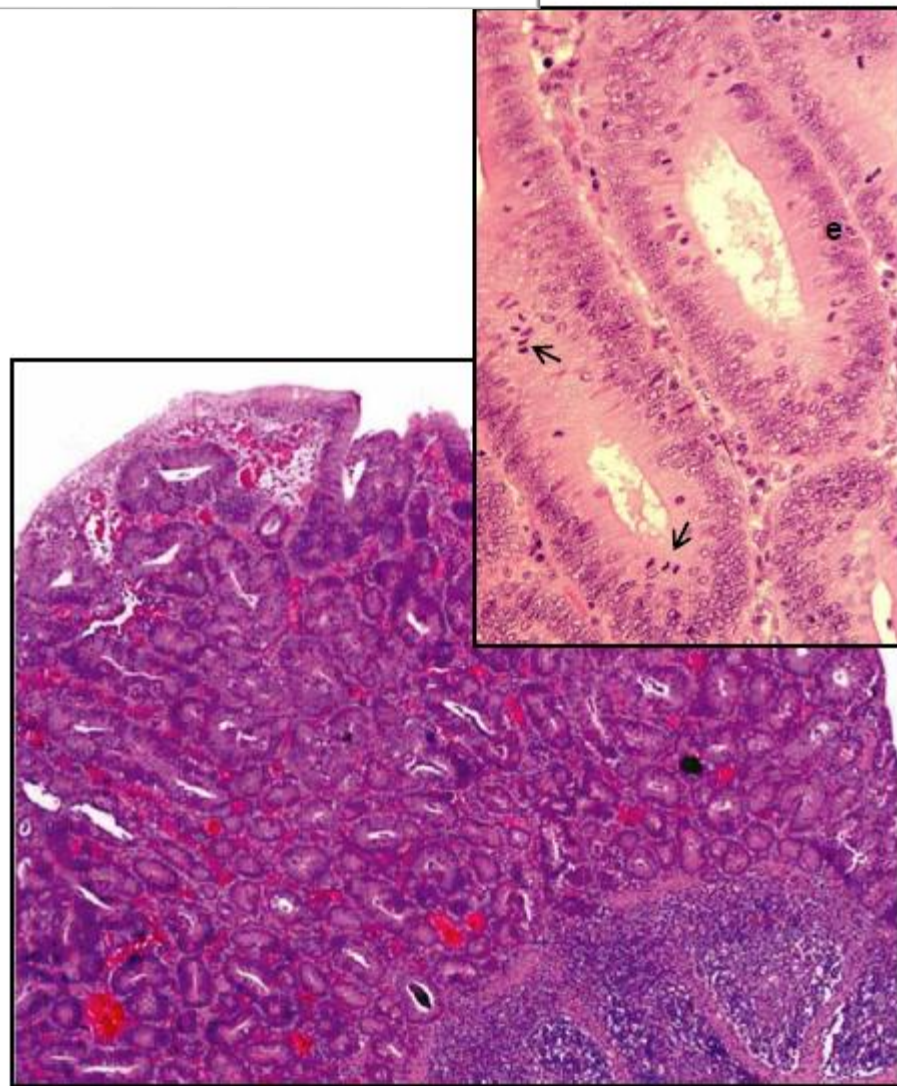
**Lawsonia enteritis**, ileum, pig. The mucosa is partially covered by a yellow fibrinonecrotic (diphtheritic) pseudomembrane. A large fibrinous cast (c) is present in the lumen, and there are prominent mucosal folds (f) in one of the segments (necroproliferative form).





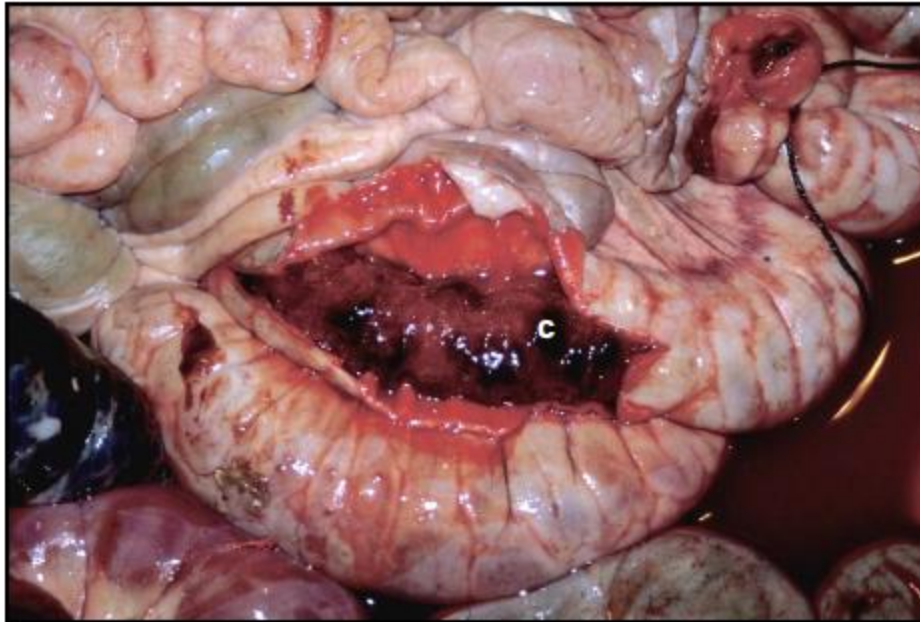
# 增殖性腸病

- ***Lawsonia intracellularis***
- Pigs >4 weeks
- **Hyperplasia of crypt epithelium**  
→ crypt necrosis
- Morbidity 5-15%; mortality ~ 50%
- **Ileum**
- **Synonyms:**
  - Proliferative enteropathy (PE)
  - Intestinal adenomatosis complex
  - Proliferative hemorrhagic enteropathy
  - Distal ileal hypertrophy
  - Regional or terminal ileitis

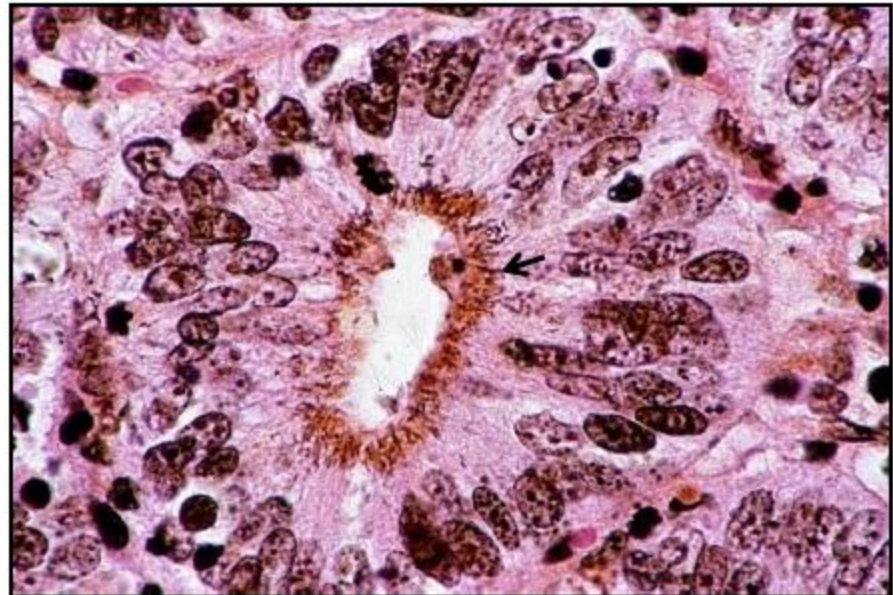
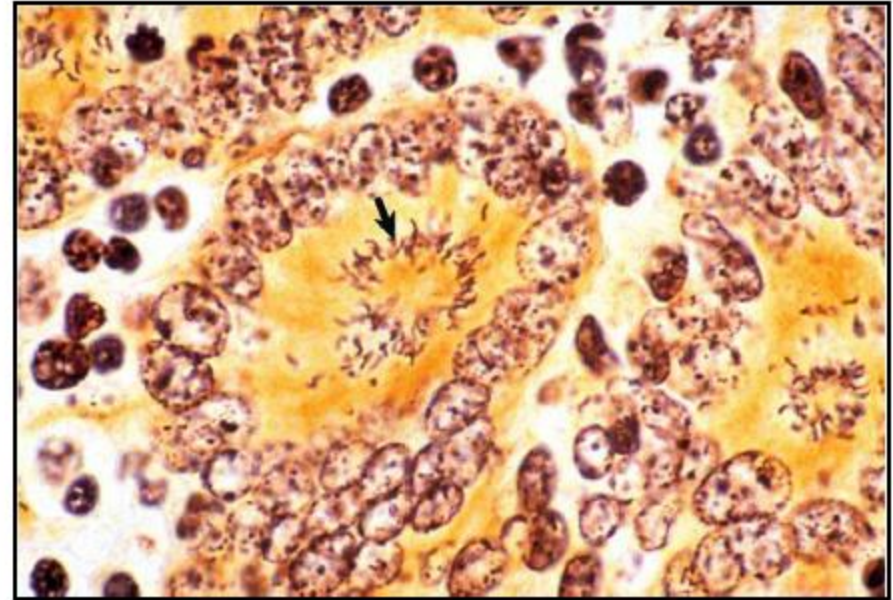


**Lawsonia enteritis, ileum, pig.** Noticeable hyperplasia of crypts resembling an adenoma. Note hyperplastic glands composed of tightly packed enterocytes (e) and numerous mitoses (arrows, inset).

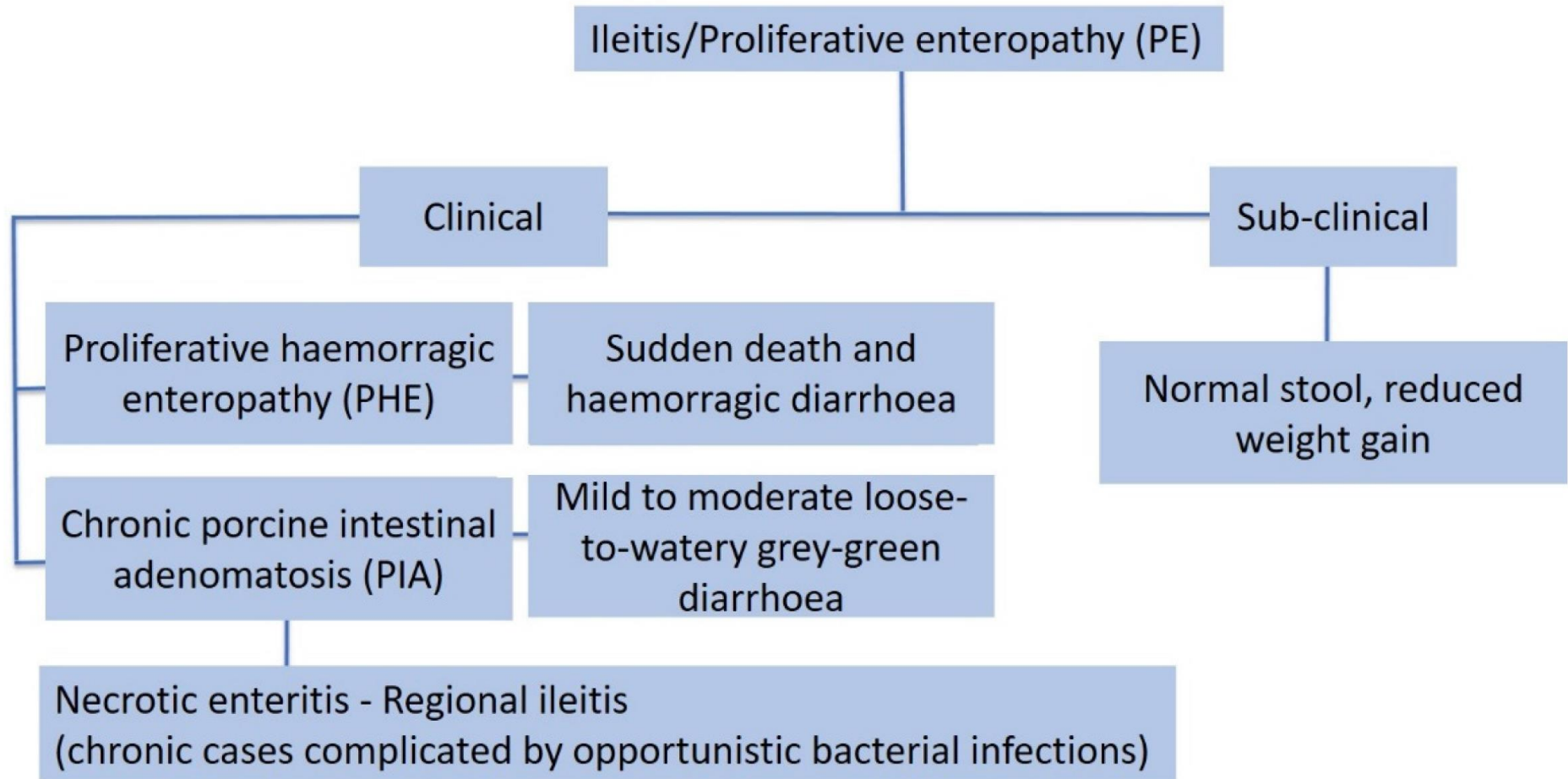




**Proliferative hemorrhagic enteropathy.** *Lawsonia* enteritis, ileum, pig. Note the large hemorrhagic cast in the lumen (c). The serosa is corrugated.



Histo. Curved *Lawsonia* spp bacteria (arrows) are present in the apical cytoplasm of enterocytes. **Warthin-Starry stain.**





## Porcine proliferative enteropathy (PE): diagnostic tools and criteria

### *L. intracellularis*

- **Age of affected pigs:** 4-12 months of age (**PHE**); 6-20 weeks (**PIA**)
- **Clinical signs:** sudden death associated with anaemia, haemorrhagic diarrhoea melena or haematochezia (**PHE**); yellow watery diarrhoea that may contain blood and mucus (**PIA**)
- **Gross lesions:** the ileum is dilated and the wall is thickened and contains one or more formed blood clots combined with fibrino-necrotic debris (**PHE**); the mucosa is thickened, corrugated, or with a cerebriform appearance (**PIA**).

### Subclinical form

- Normal faeces
- Reduced weight gain

### Laboratory investigations

Histopathology: are there characteristic lesions in the ileum ?

PCR/qPCR assays: screening method

+

-

Yes

No

IHC positivity ? (gold standard)

Yes

No

Diagnosis of PE

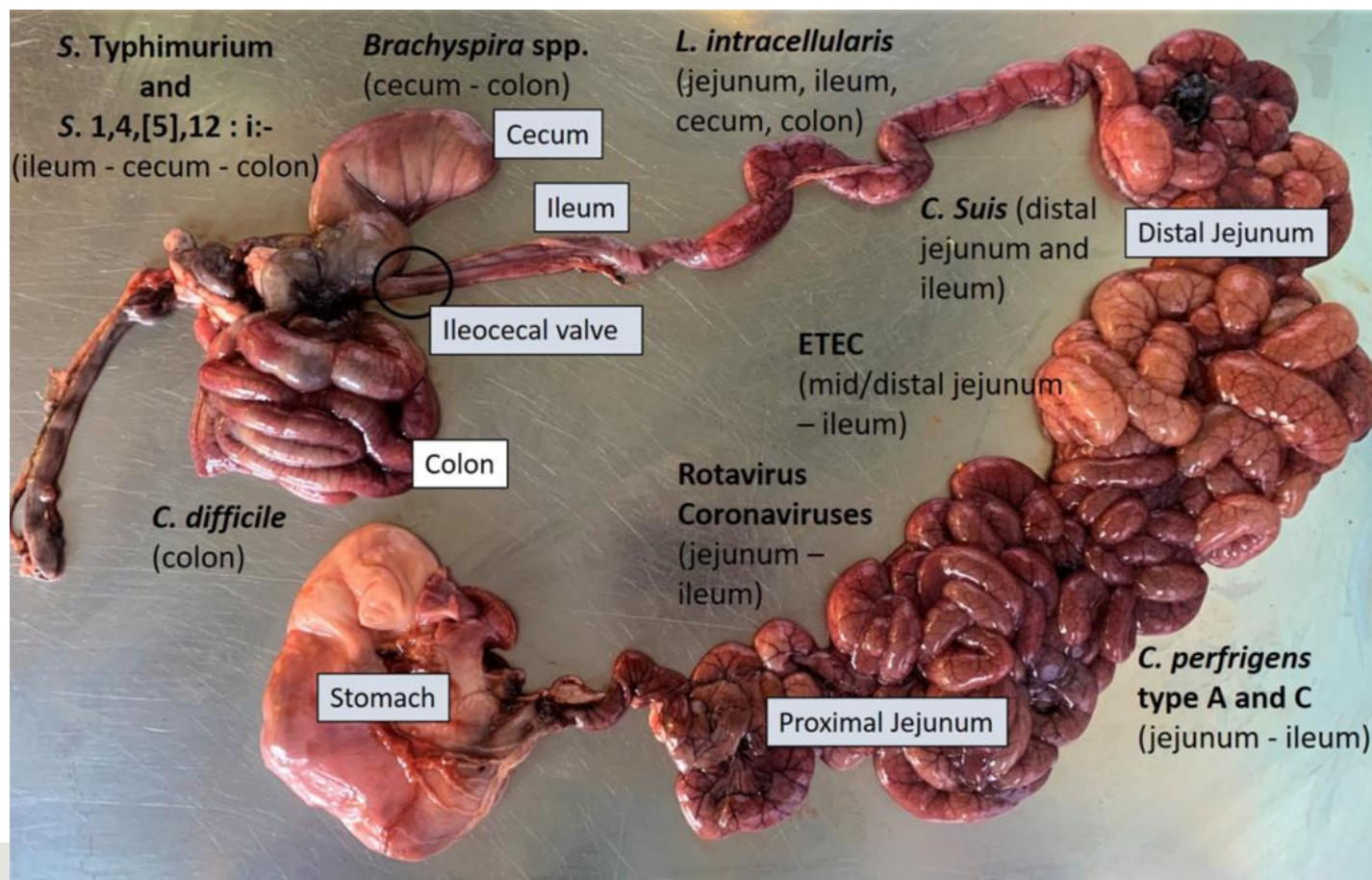
Diagnostic criteria for PE not respected

Caution when interpreting negative IHC results due to the inexact segmental distribution of the PE lesions.

It is important to sample more segments of ileum

# 豬赤痢 (Swine Dysentery and Porcine Colonic Spirochetosis)

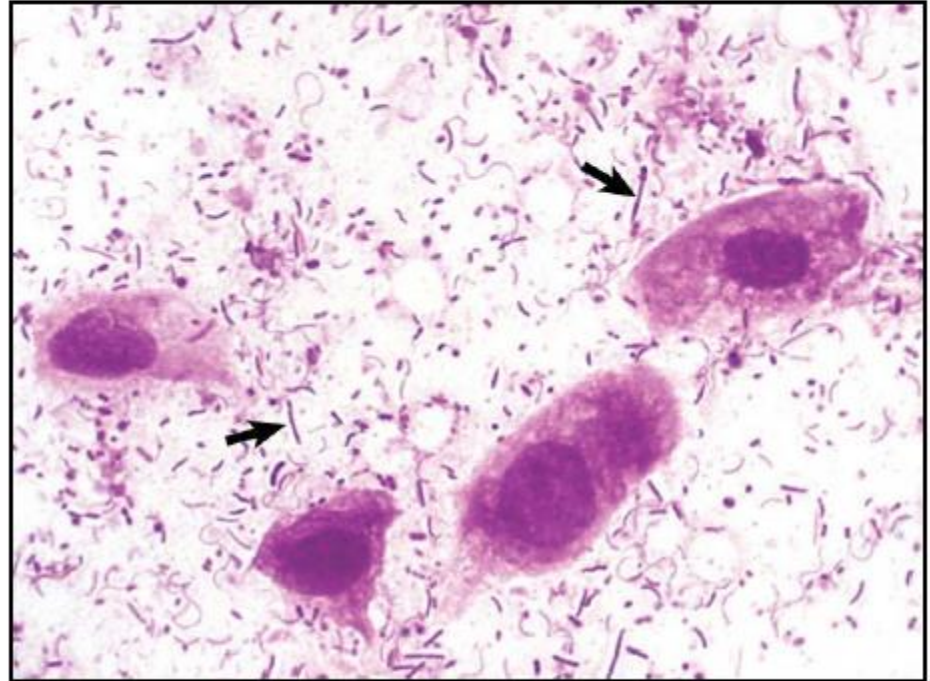
- 散發發生在五到六月齡肥育豬
- 症狀：暗紅血便突然死亡





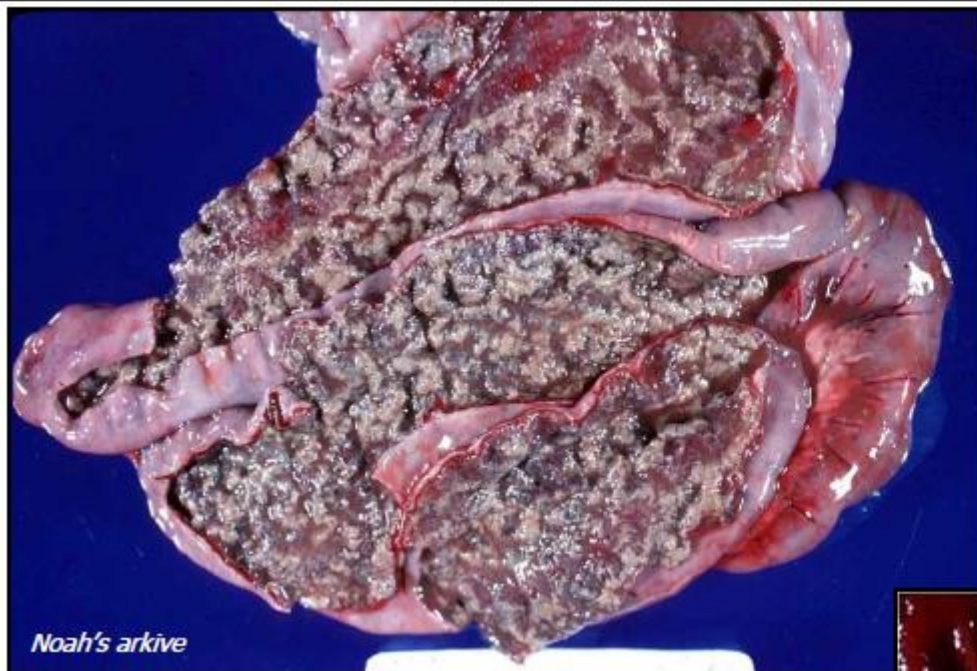
# Swine dysentery

- *Brachyspira hyodysenteriae* + anaerobic bacteria
- Pigs 8-14 wks old
- Morbidity ~ 90%; mortality ~ 30%
- **Colon**
- Findings:
  - Colonic malabsorption syndrome
  - Fibrinonecrotic pseudomembranes
  - Hemorrhage
  - Necrosis of **superficial mucosa**
  - **Luminal spirochetes (Warthin-Starry)**

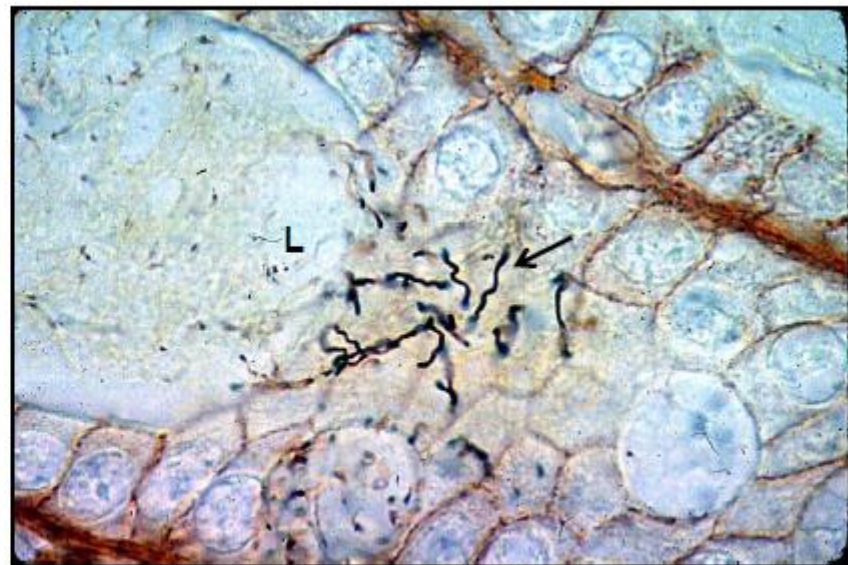


**Swine dysentery, colon, pig.** This impression smear contains a few enterocytes and numerous bacteria. Note the spiral bacteria (arrows) consistent with *Brachyspira* spp. Diff-Quik stain.





Noah's arkive



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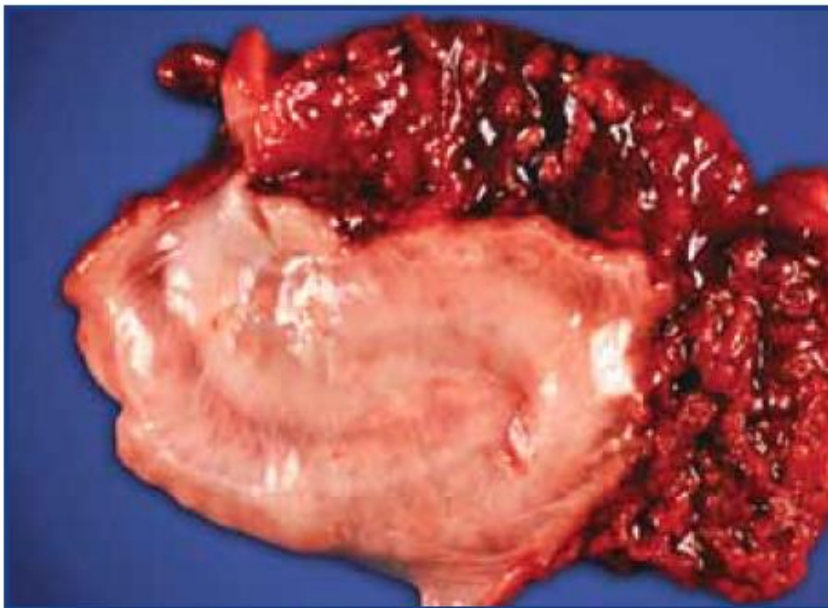
Noah's arkive

**Swine dysentery.** The mucosa of the spiral colon has a rough diphtheritic membrane due to necrosis of superficial mucosa and fibrin exudation (top left). Hemorrhagic colitis (bottom right). Bloody anal discharge (bottom left). *Histo:* Colon, several spiral bacteria (arrow) are present in the lumen of a crypt (L). Silver stain.

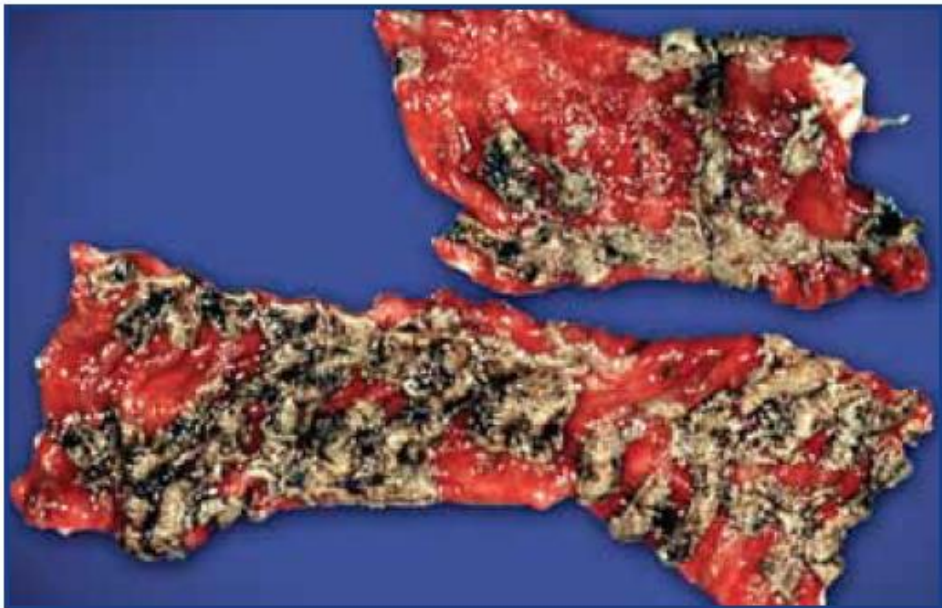




Edematous and hemorrhagic large intestinal mucosa (inner lining)



Thick-walled, hemorrhagic and edematous large intestine

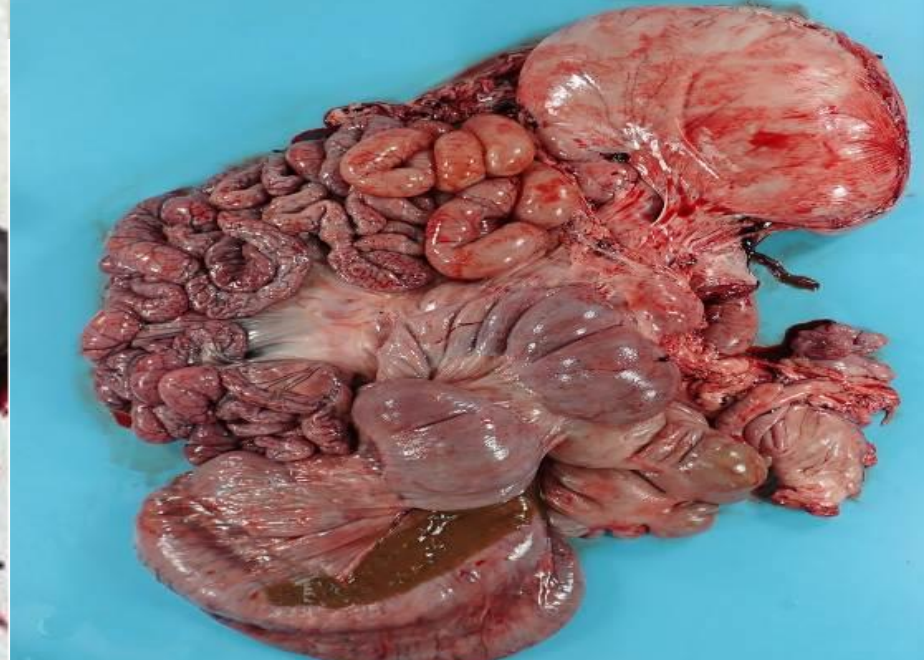


Fibrinonecrotic debris with dark blood clots on the colon mucosa

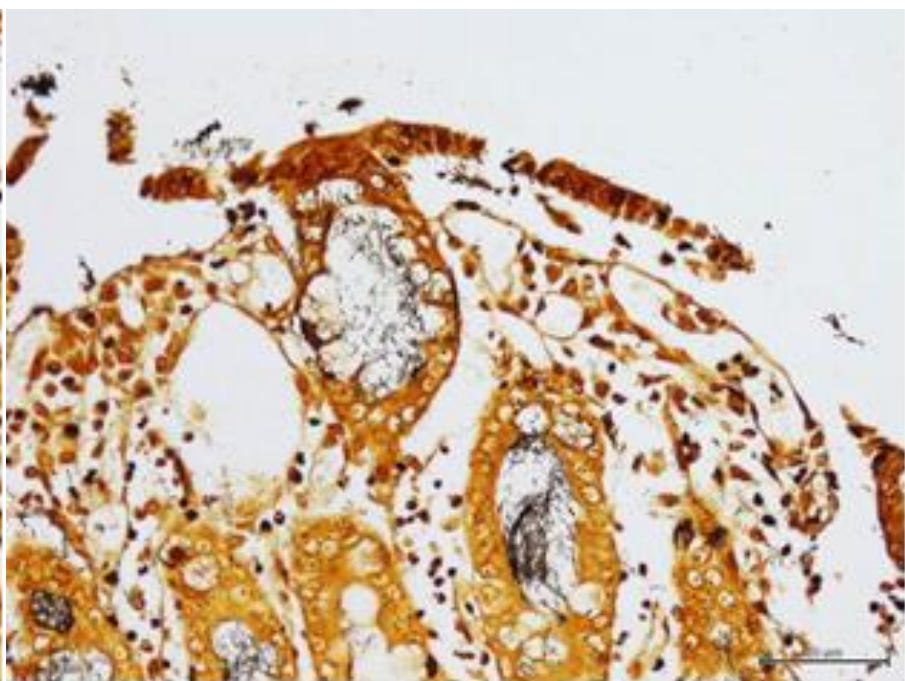
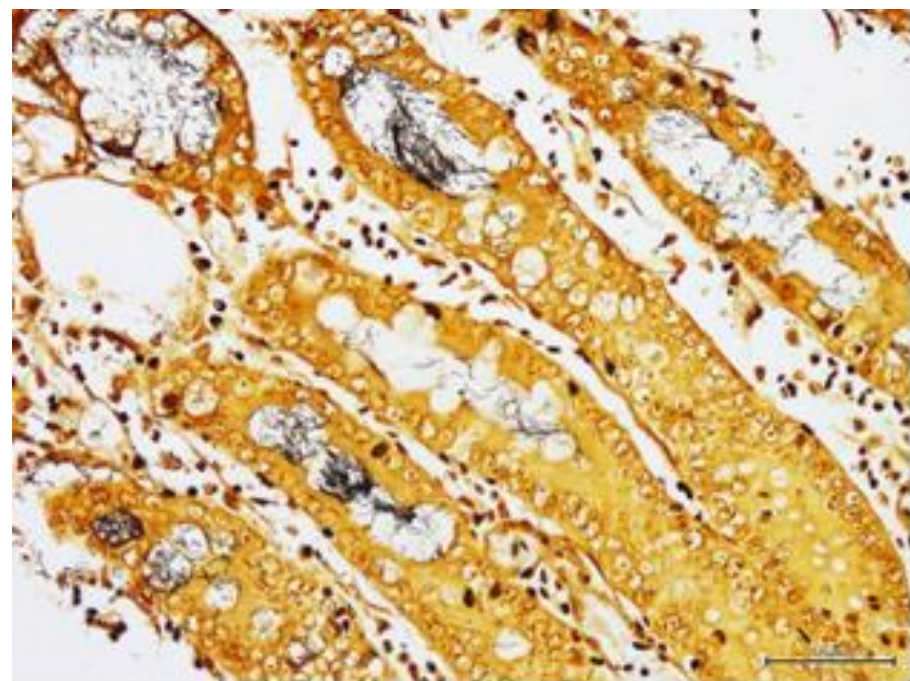
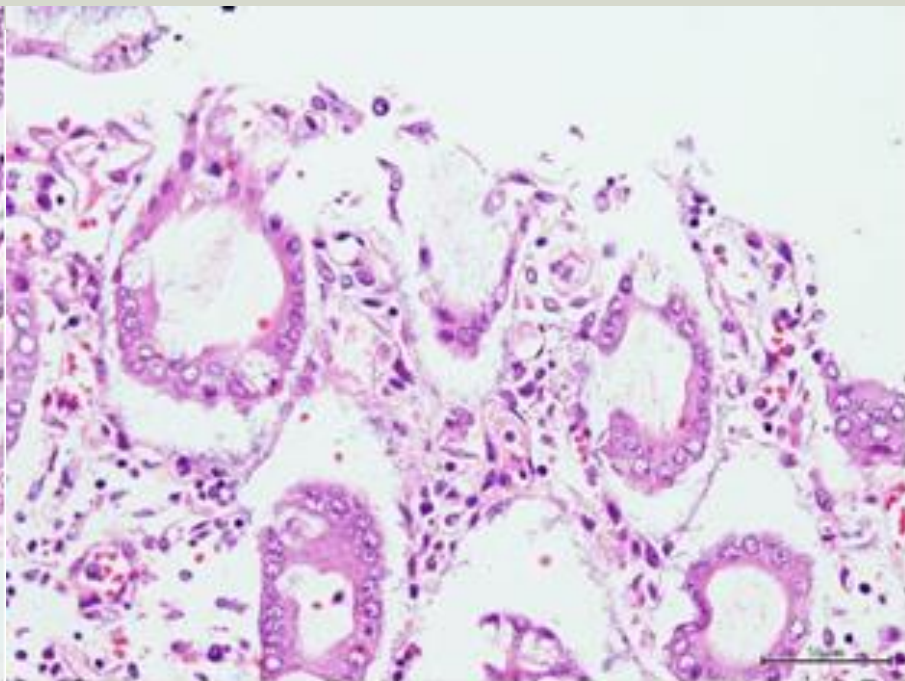
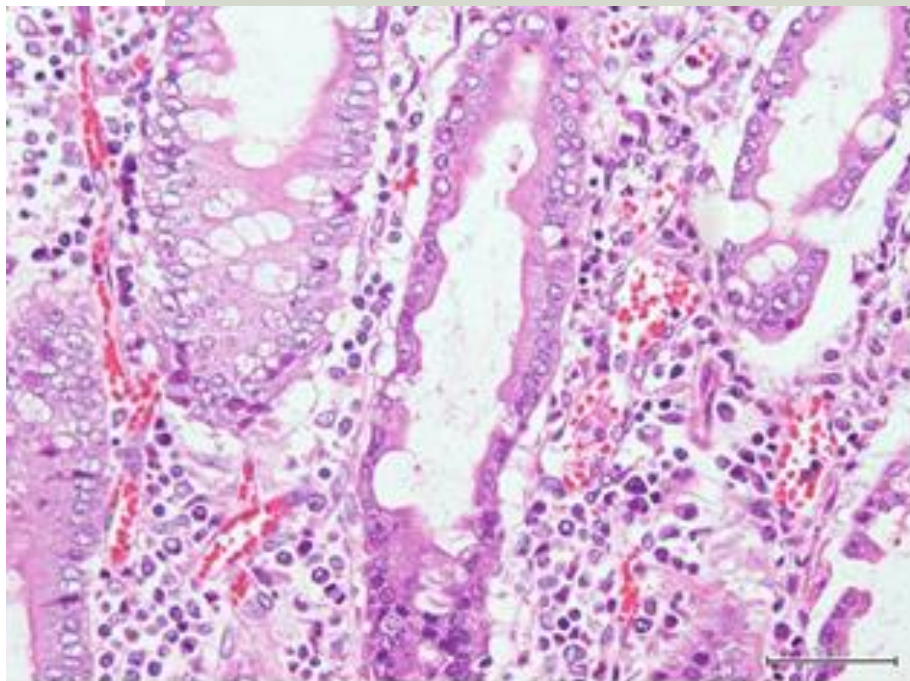


Chronic Swine Dysentery: less blood but thickened mucosa covered with adherent yellow tan necrotic membrane.







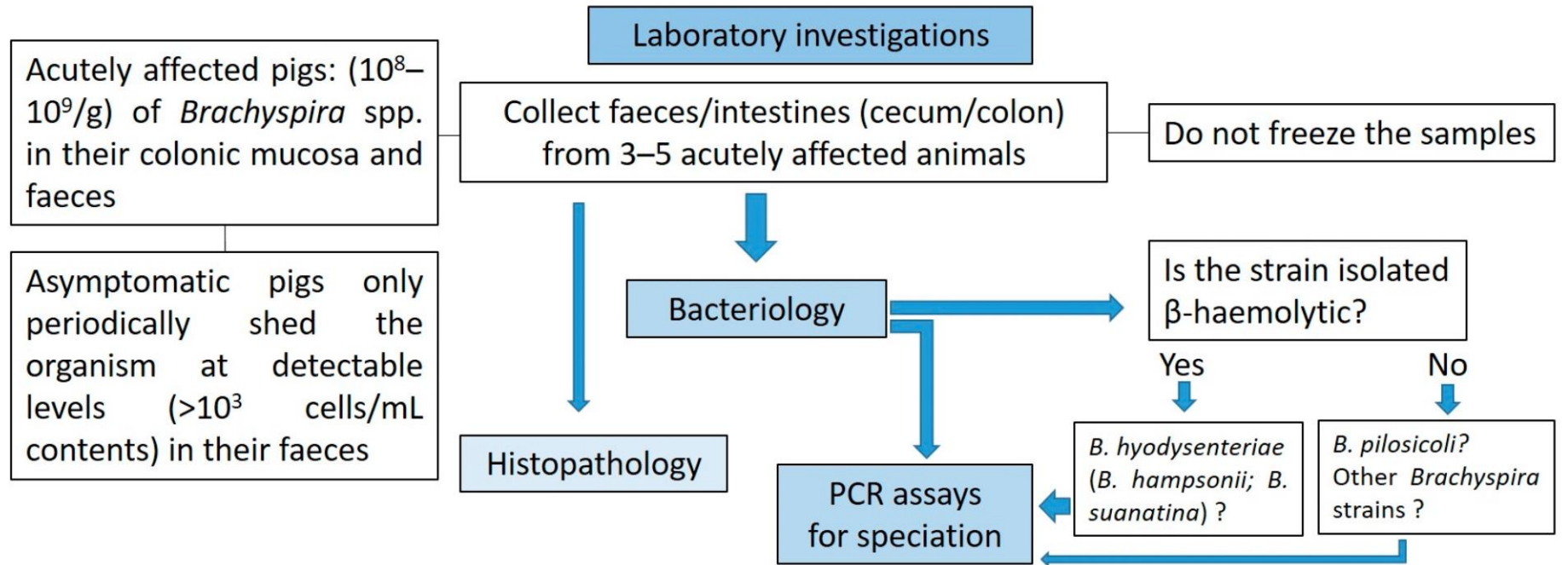




## Swine Dysentery (DS): diagnostic tools and criteria

### *B. hyodysenteriae* (*B. hampsonii*; *B. suanatina*)

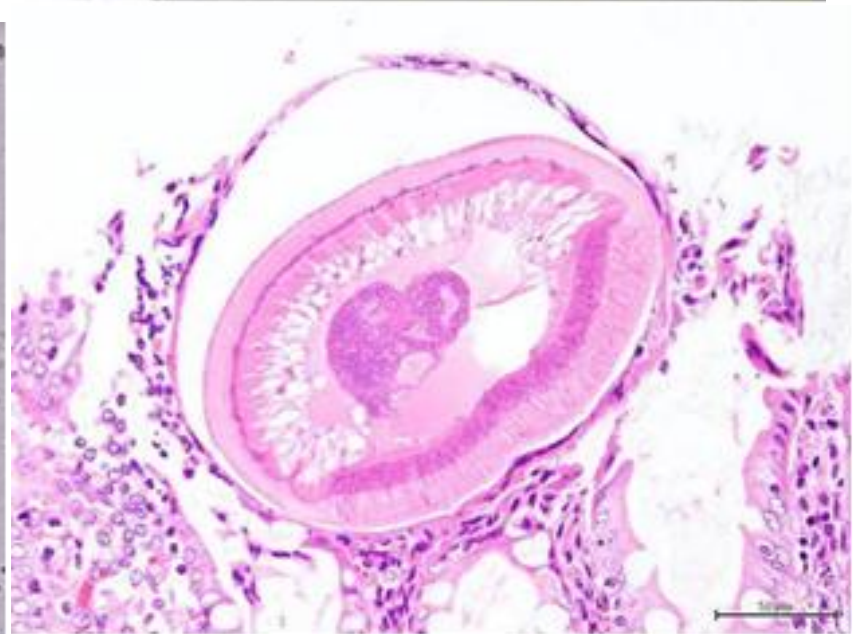
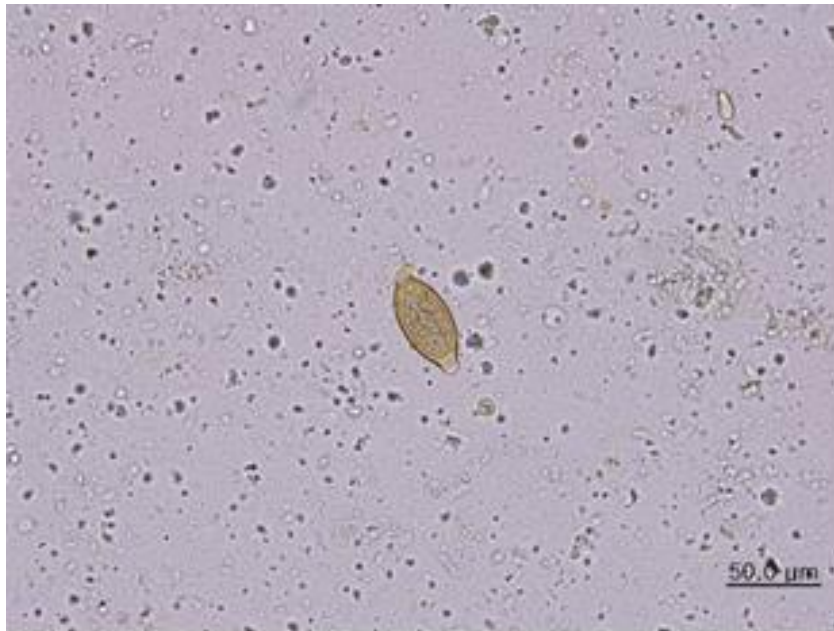
- **Age of affected pigs:** mainly in grower and finisher pigs
- **Clinical signs:** yellow to grey diarrhoeic faeces, with muco-fibrinous exudate and blood
- **Gross lesions:** muco-haemorrhagic typhlocolitis





# 豬鞭蟲症 *Trichuris suis*

- 三到四月齡之肥育豬隻好發，氣候炎熱、豬舍潮濕好發。發生過會一直發生
- 症狀：綠色軟泥便，盲腸內可見有長約一公分蟲體





# 豬蛔蟲感染 *Ascaris suum*



**Intestinal impaction**



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