

## Neonatal diarrhoea in pigs

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# Neonatal diarrhoea in pigs

Tim K. Jensen

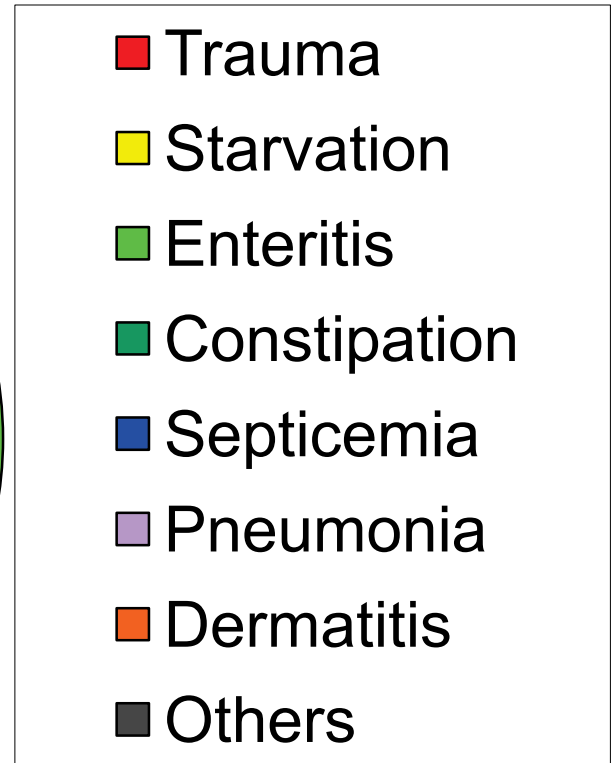
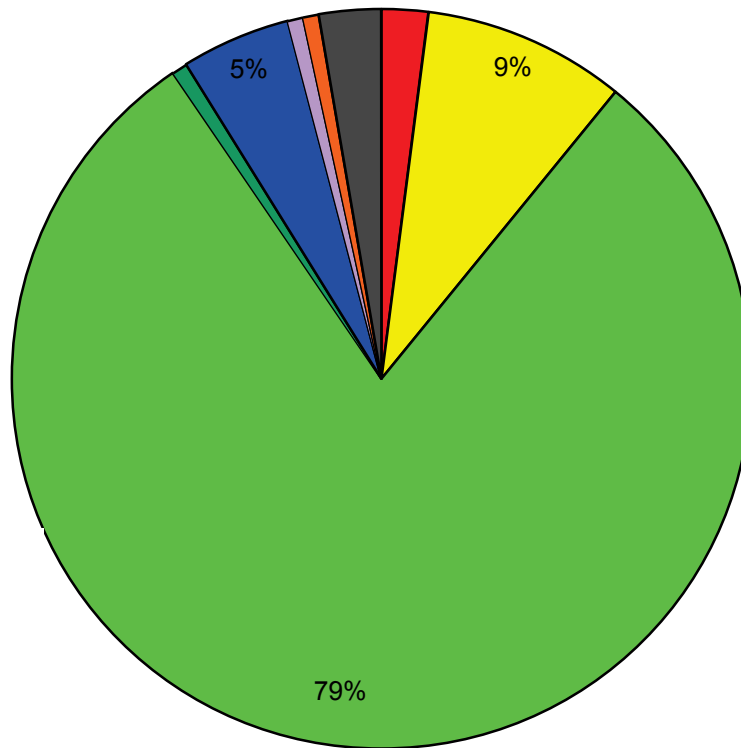
The 34th NSVP Meeting Oslo 2010

# Neonatal diarrhoea in pigs

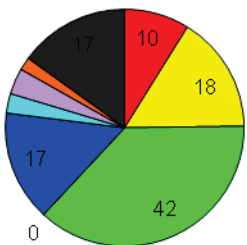
## Laboratory findings

- Agents found at Danish laboratories
- Is there a change over time?
- New Neonatal Porcine Diarrhoea

# Diagnoses, pigs 0 - 5 days 2008, 147 submissions Laboratory for Swine Diseases Kjellerup



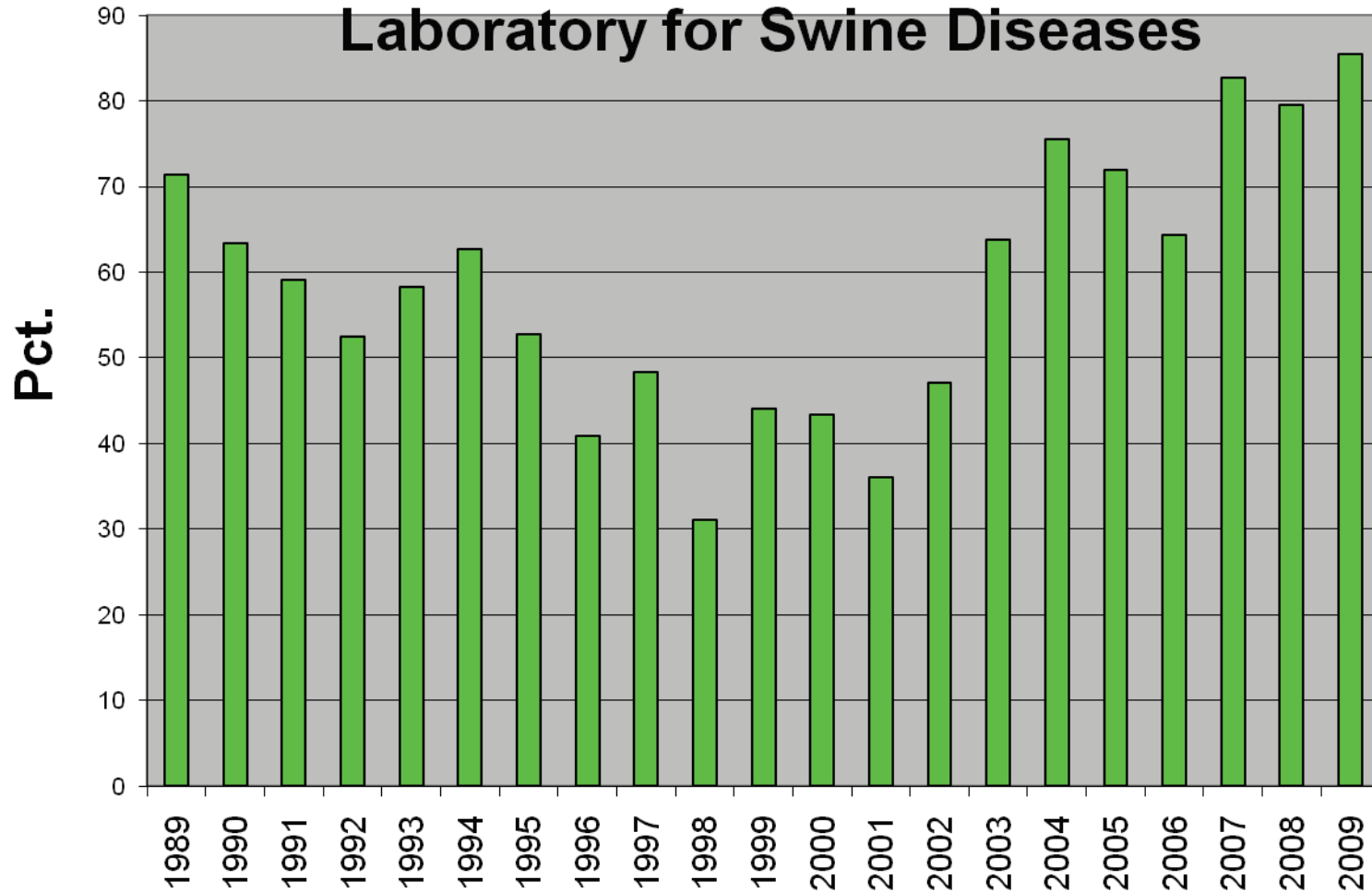
1998



# Submissions with enteritis, in percent of submissions

Pigs 1 - 5 days, 1989 - 2009

Laboratory for Swine Diseases



# Neonatal diarrhoea in pigs

## well-known causes:

- Bacteria
- Virus
- Management
  - Starvation
  - Low temperature
  - Colostrum deficiency
  - Poor hygiene

# Neonatal diarrhoea in pigs

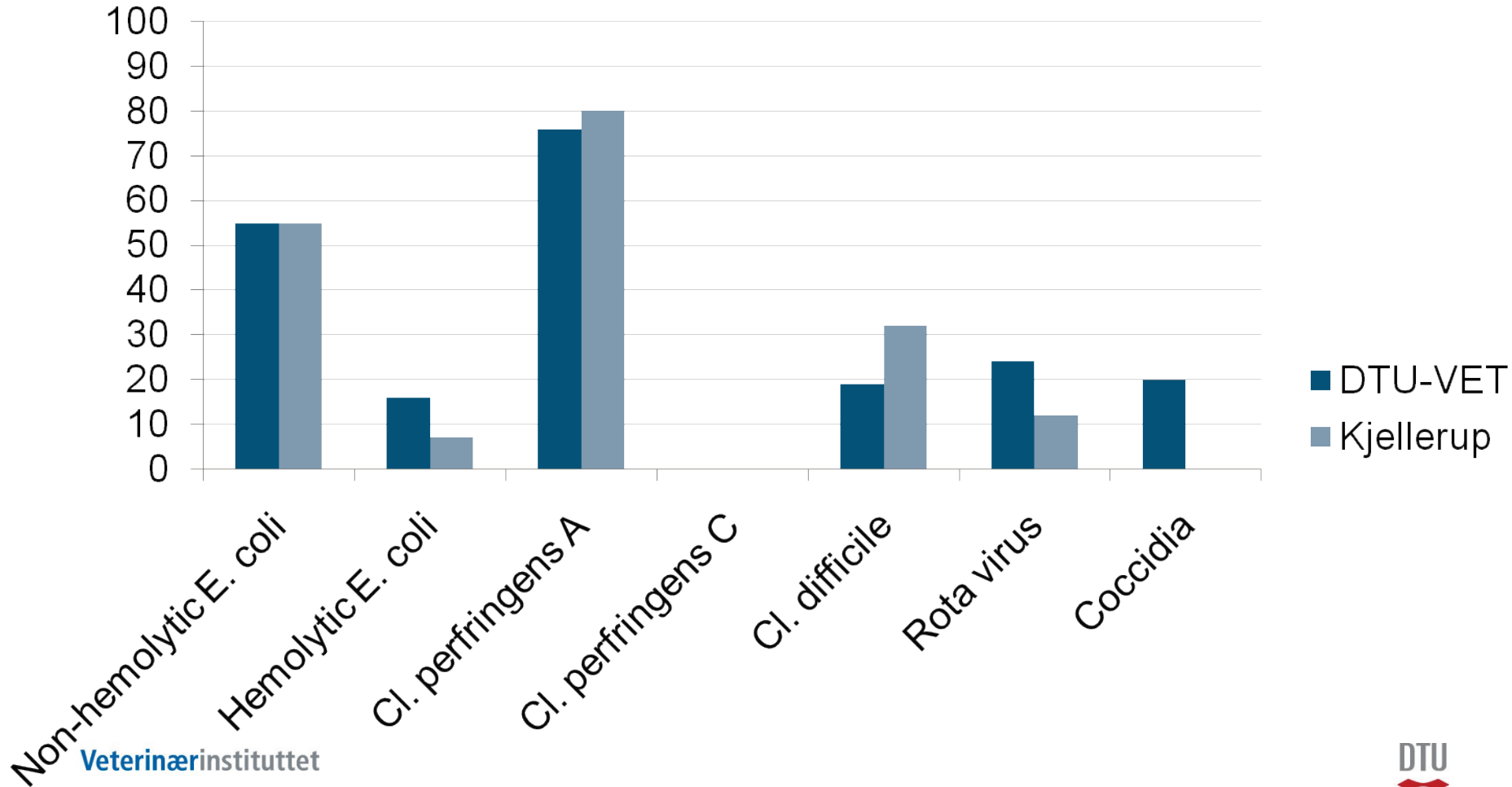
## pathogens:

- E. coli
  - Hemolytic E. coli, ETEC
  - Non-hemolytic E. coli, ETEC
- Cl. perfringens, type C
- Cl. perfringens, type A
- Cl. difficile
- Rotavirus

# Positive analyses in pigs 2008

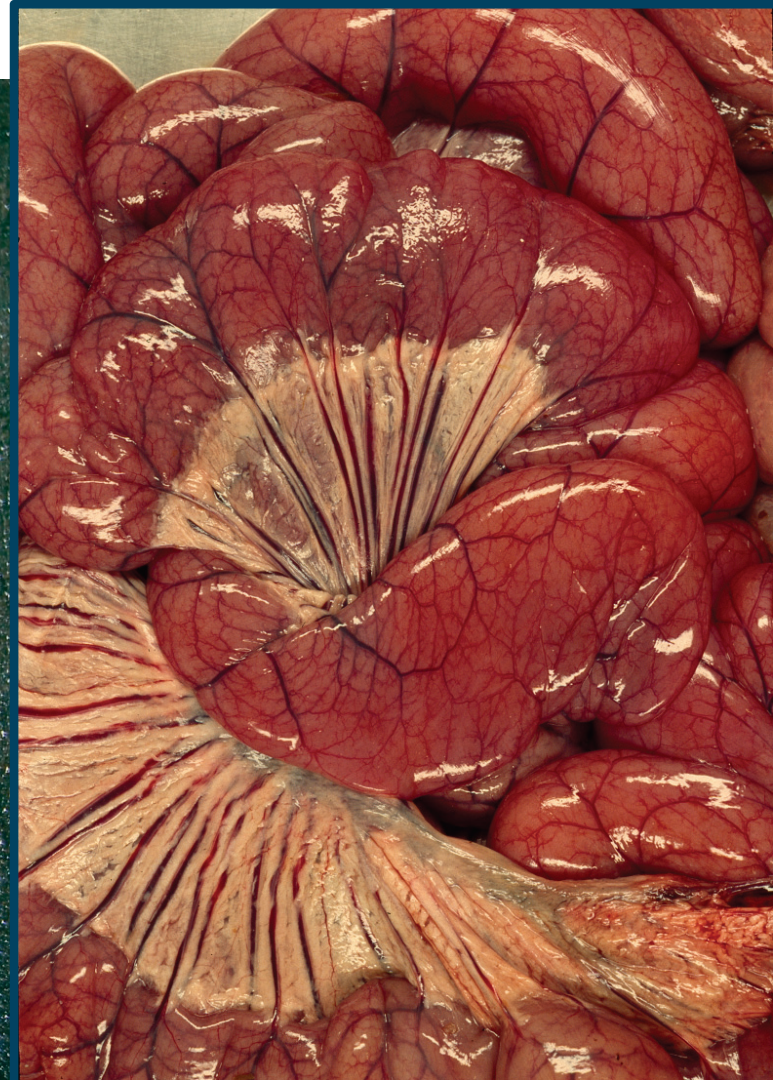
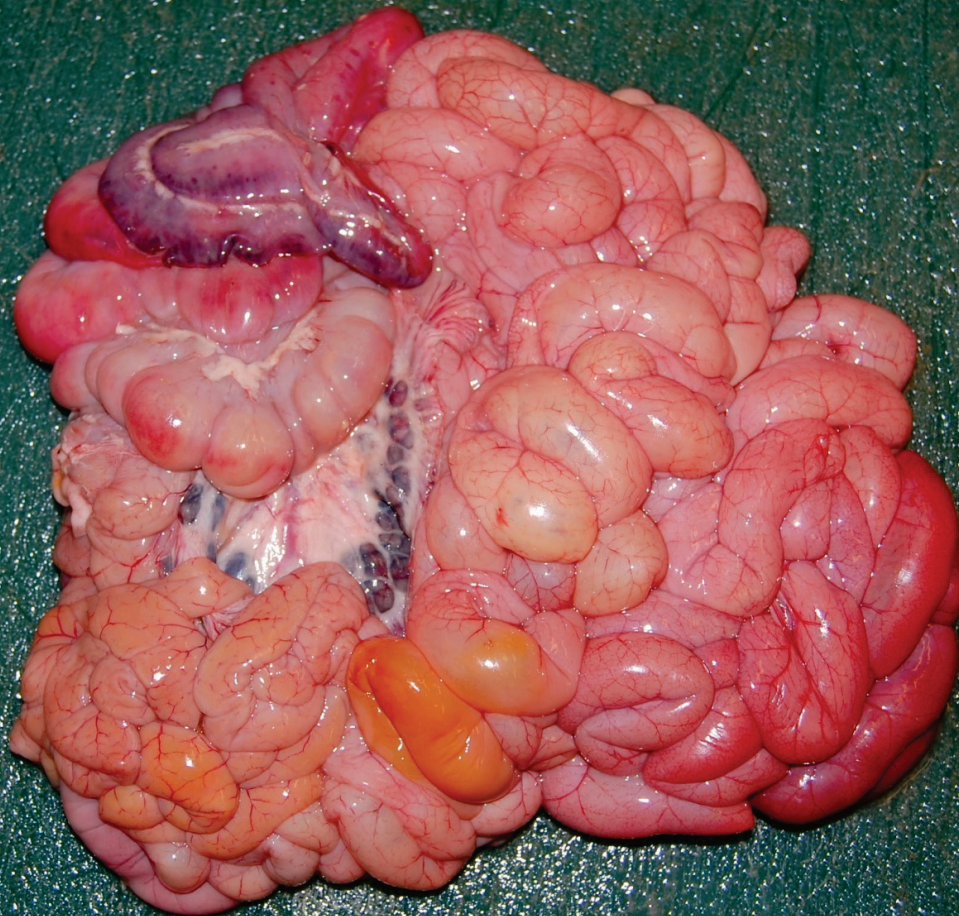
DTU-VET 0 – 4 weeks

Kjellerup 0 – 5 days

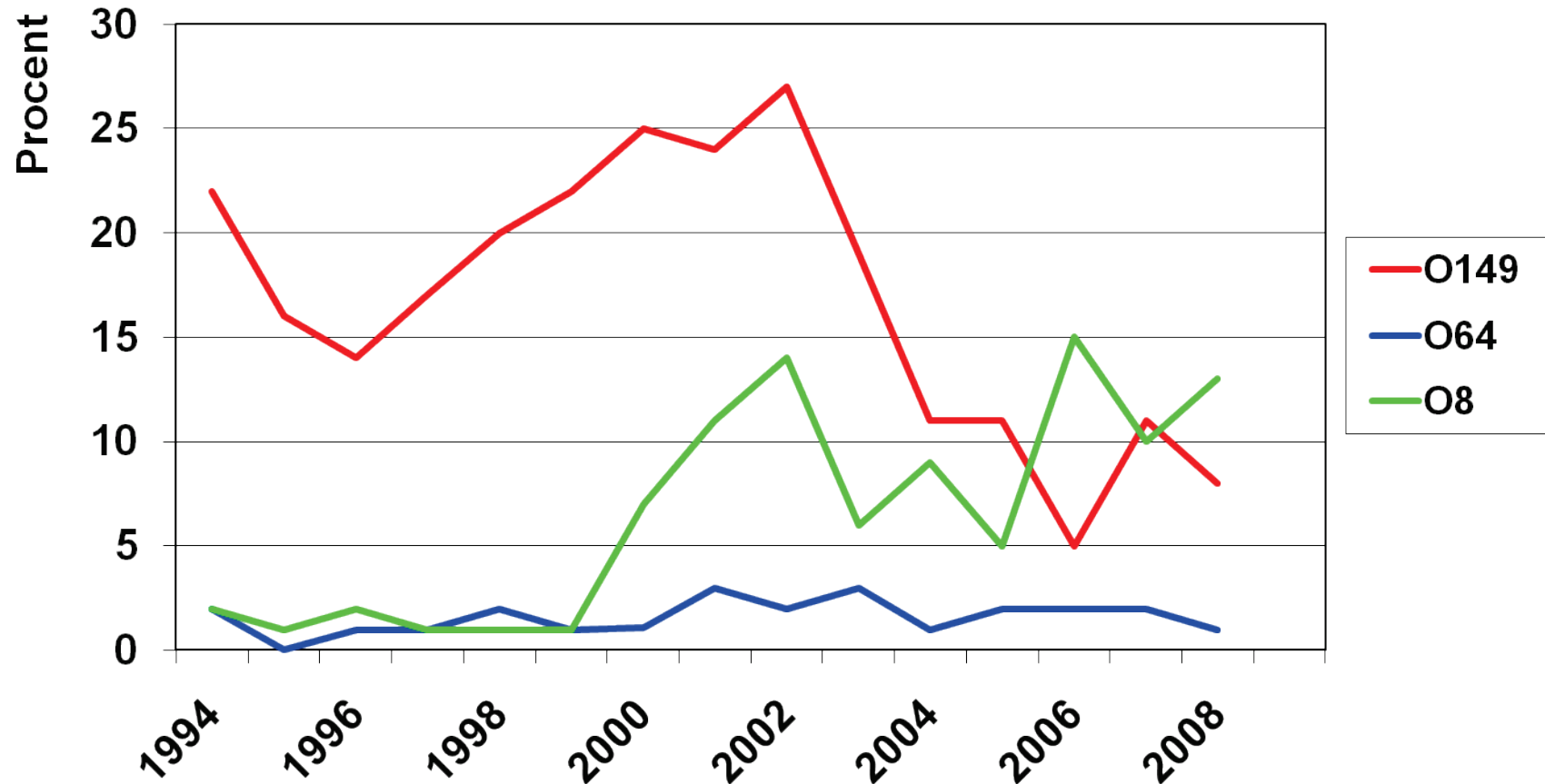




# Hemolytic E.coli, O149



Isolation of *E. coli* types, 0-4 weeks,  
compared to submissions with the anamnesis diarrhoea,  
SVS/DFVF/DTU-Vet



# Virulens factor F4, genotype distribution in young breeding animals

<b>Race</b>	<b>2003, Sensitive</b>	<b>2008, Sensitive</b>
<b>DD</b>	12 %	2 %
<b>LL</b>	99 %	19 %
<b>YY</b>	81 %	4 %



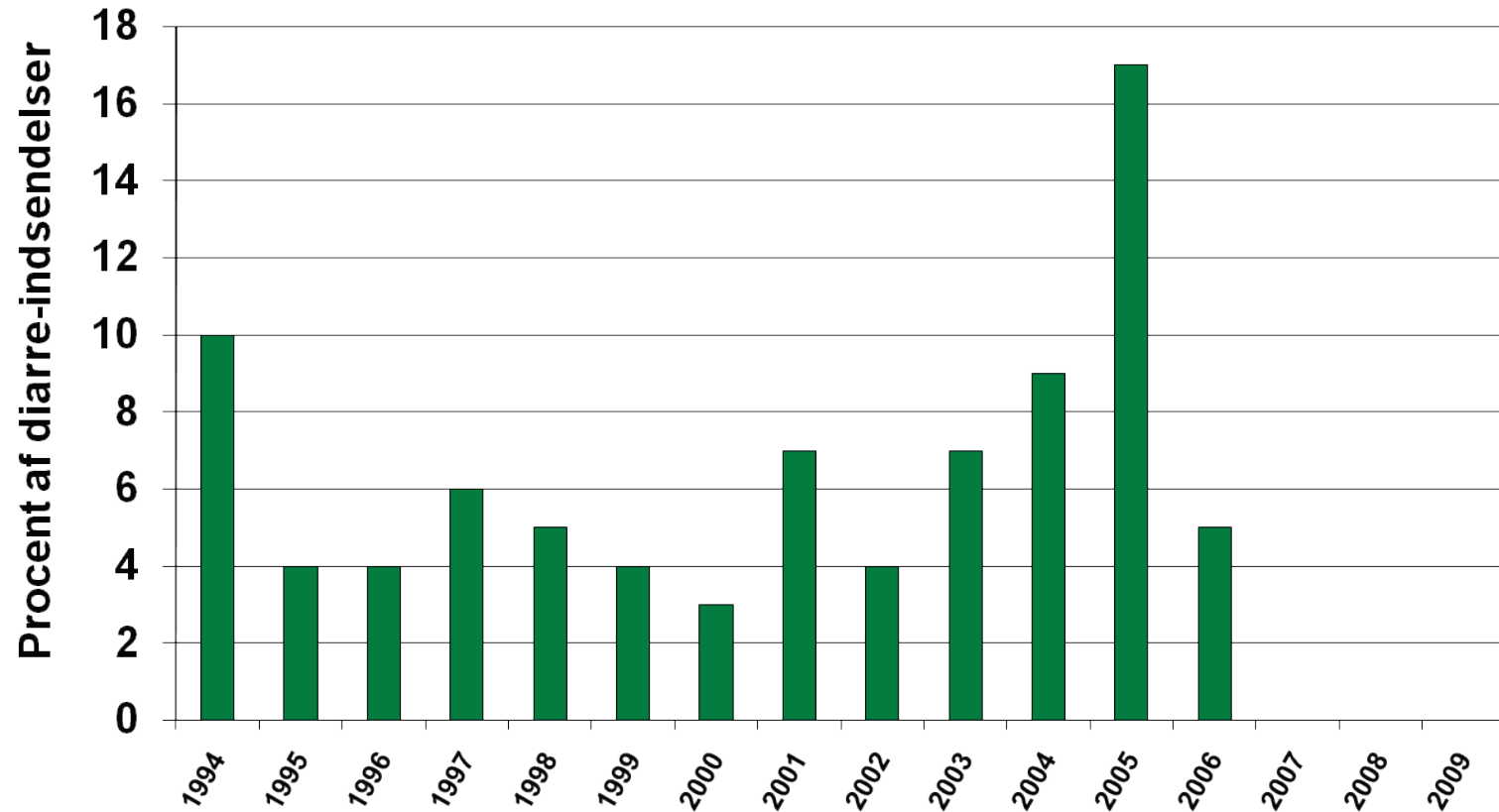
## Non-hemolytic *E. coli*?, non ETEC



# Necrotizing enteritis - Detection of *C. perfringens* type C

Figs 0 - 4 weeks, DTU-VET

Percent of submissions with anamnesis diarrhoea



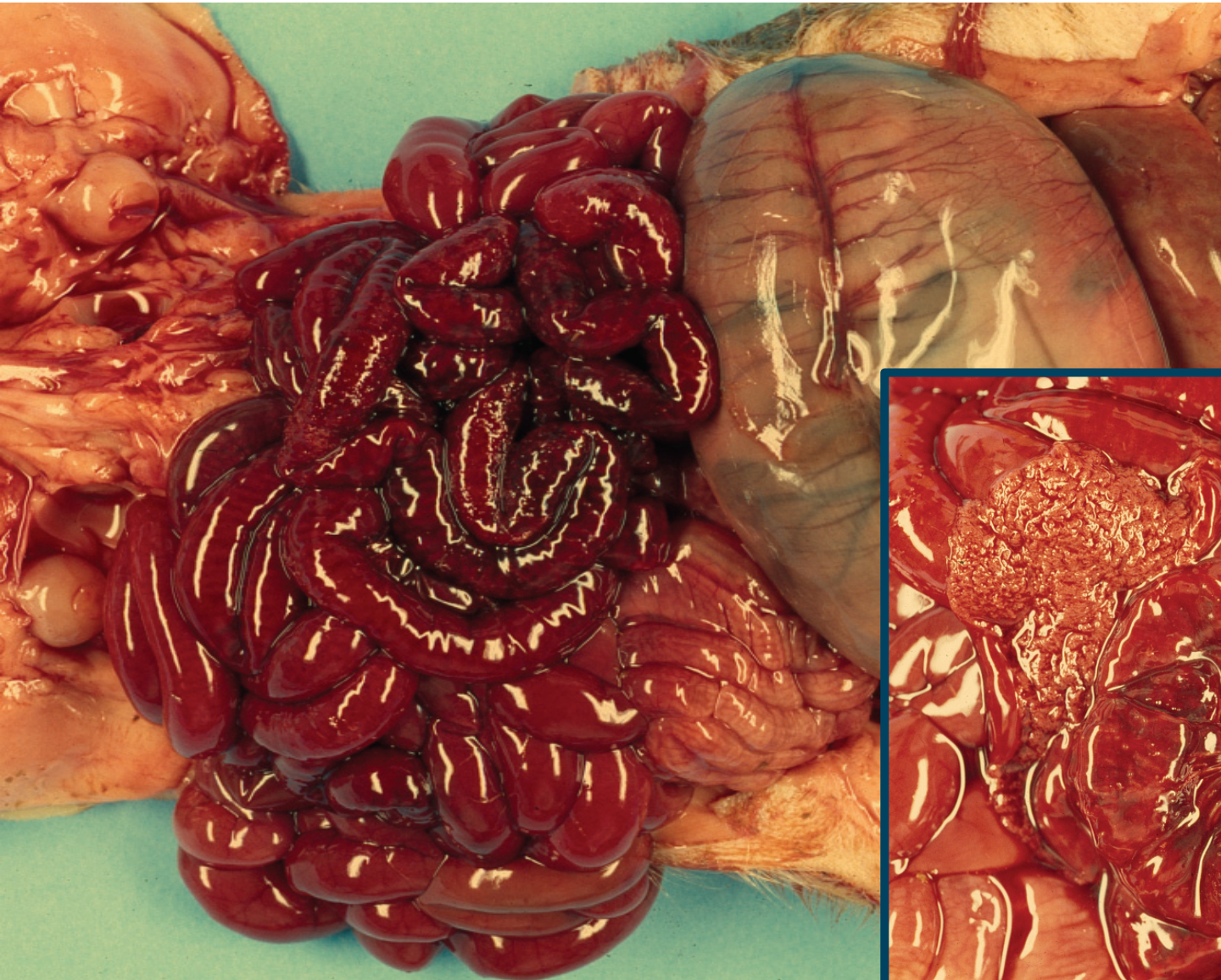


*Cl. perfringens*, type C necrotizing enteritis



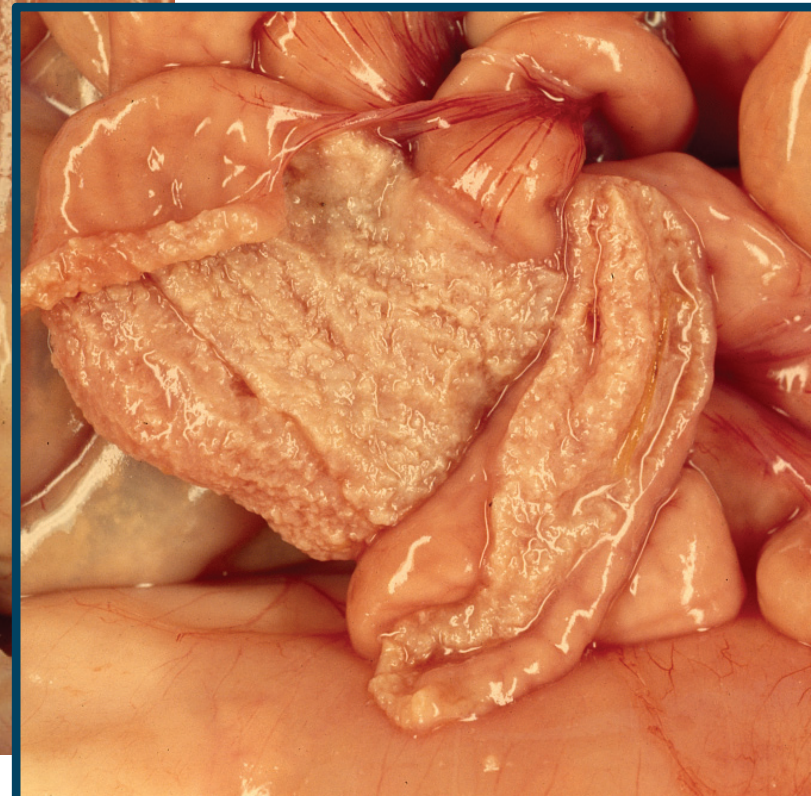
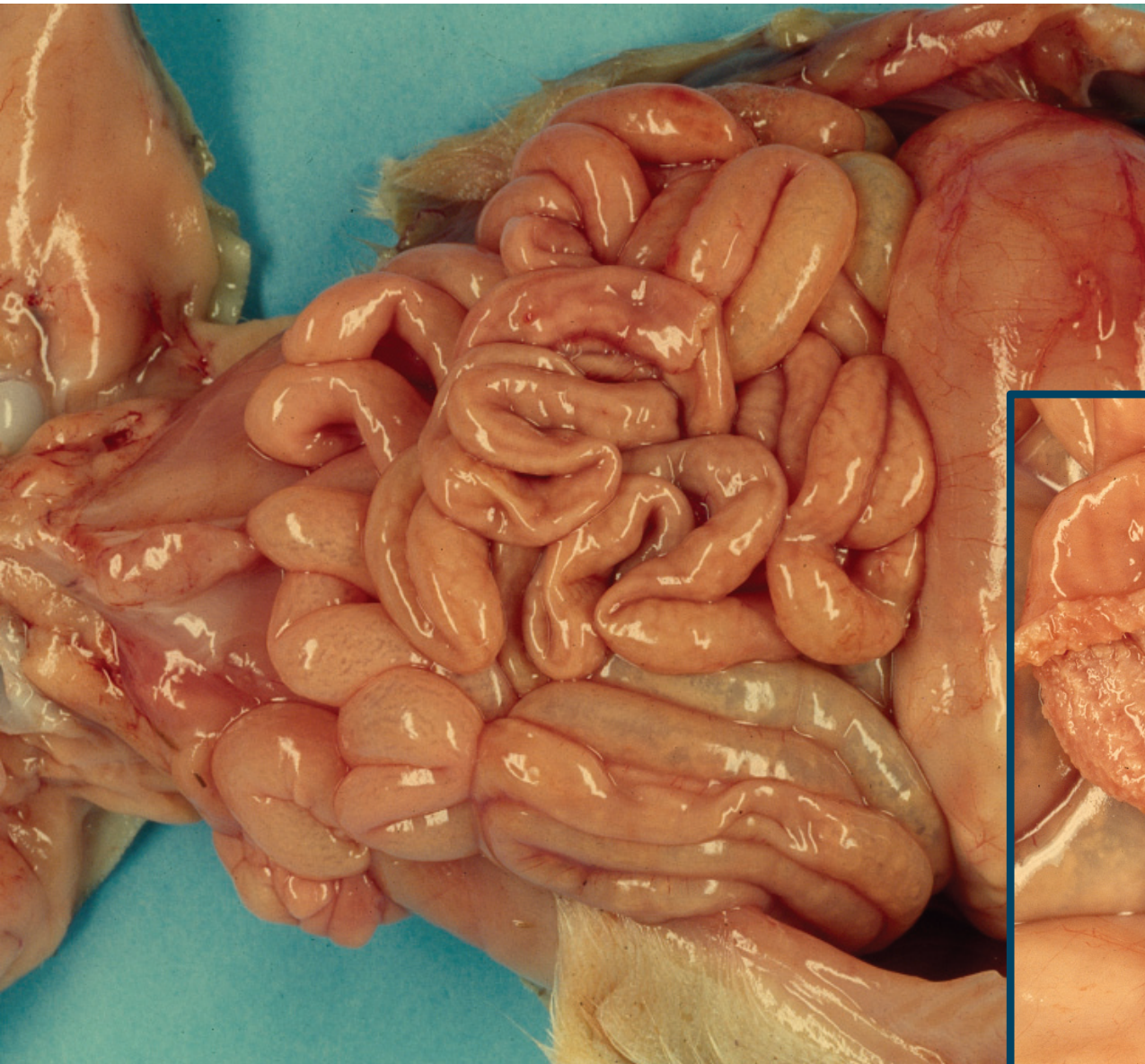


# *Cl. perfringens*, type C acute necrotizing enteritis





*Cl. perfringens*, type C mild necrotizing enteritis

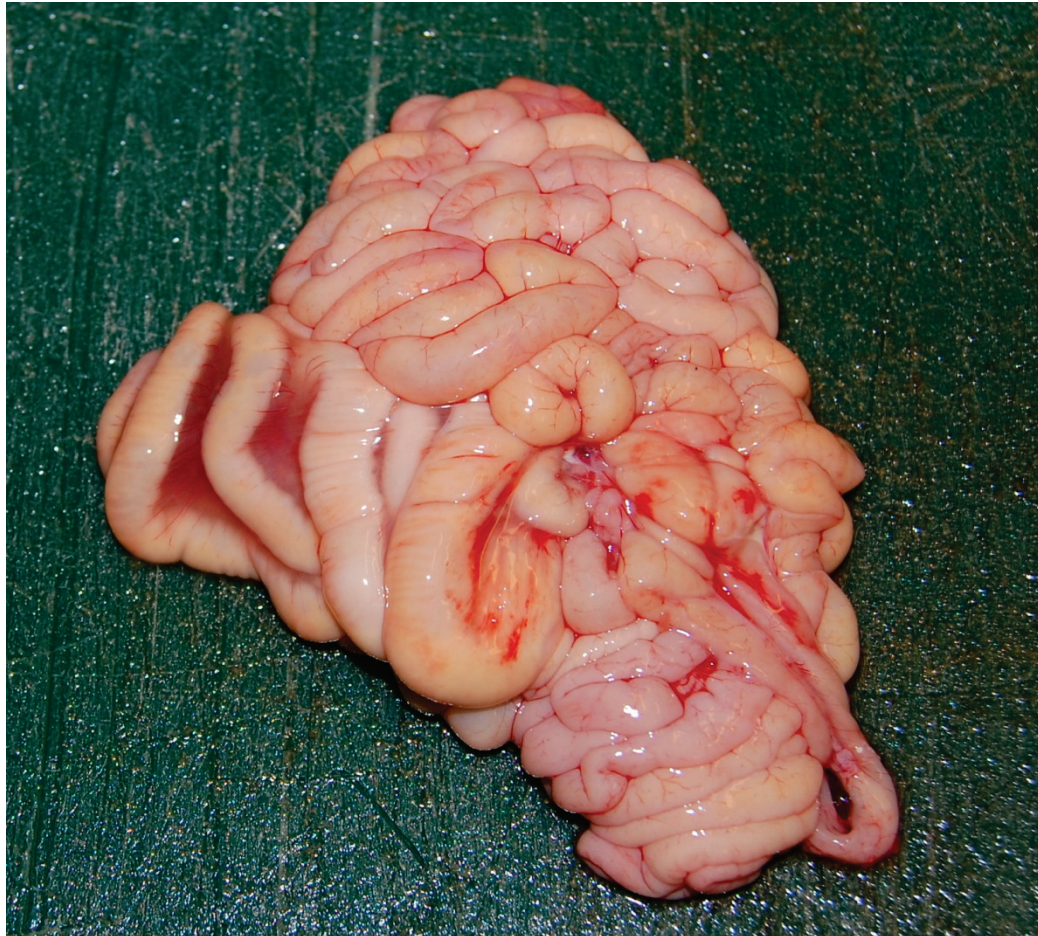




*Cl. perfringens*, type A?

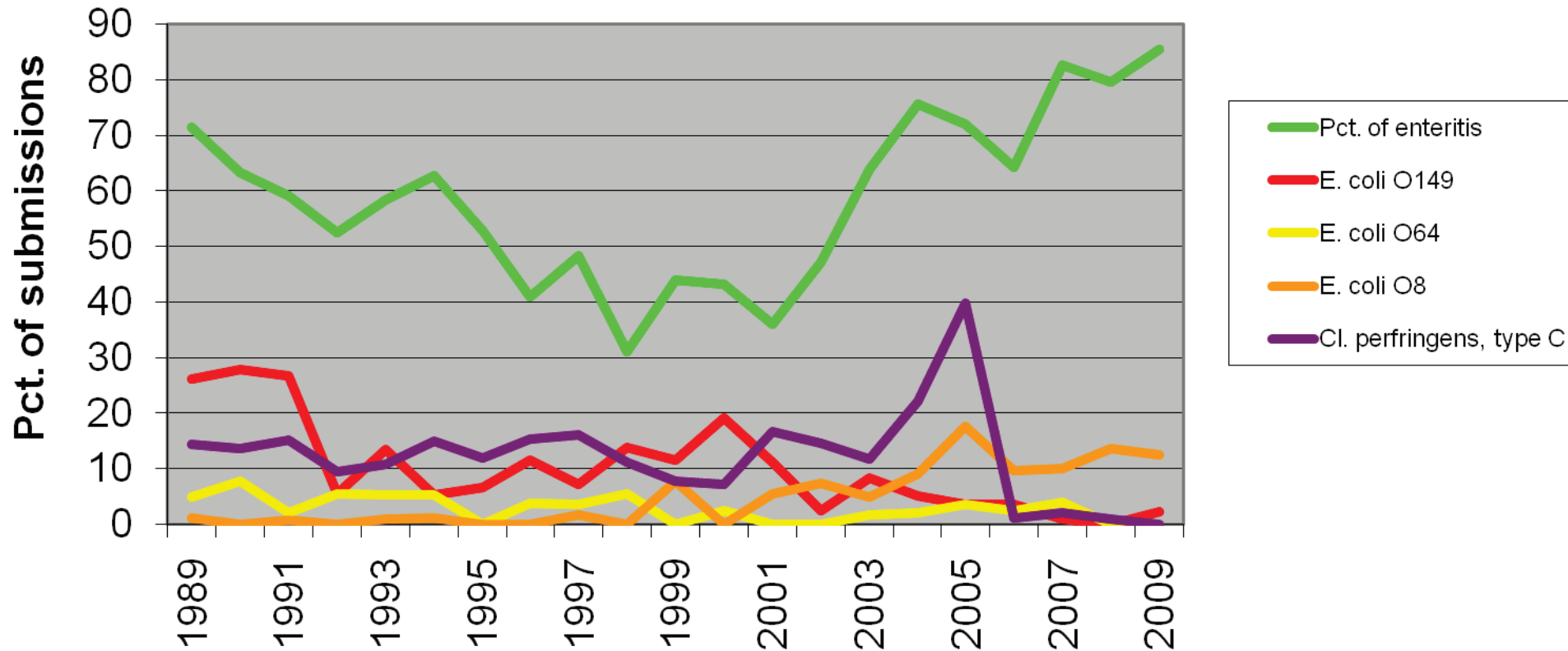


Cl. difficile ?



# New Neonatal Porcine Diarrhoea (NNPD)

Bacterial diagnoses in percentage of enteritis in pigs 1 - 5 days  
1989 - 2009  
Laboratory for Swine Diseases



# New Neonatal Porcine Diarrhoea?

- New pathogens
  - Bacteria (Cl. Perfringens type A?)
  - Virus
- Small / immature piglets
  - Low birthweight
  - Immature
  - Insufficient colostrum supply
- Nutritional, toxins in the sow feed
- Antibiotic treatment

# New project

## Titel:

- **New Neonatal Porcine Diarrhoea**
  - Aetiology and diagnosis
  - Treatment
  - Prevention

## Period:

- 01.01.2010 – 31.12.2013

## Collaboration

- DTU-VET and VSP (Danish Pig Industry)

## Economi:

- 10.5 mill. Dk kr.



# New Neonatal Porcine Diarrhoea Hypotheses II

- ✓ NNPD is a syndrome, different from classic E. coli diarrhoea, necrotizing enteritis (Cl. perfringens type C) and rotavirus
- ✓ NNPD leads to changes in the gut which are characteristic for the syndrome
- ✓ Infectious agents have a significant role in NNPD  
Toxin production from Cl. perfringens type A and prevalence of Cl. difficile affects NNPD
- ✓ The establishment and composition of the intestinal microbiota of the newborn pig is important for the development of NNPD

# New Neonatal Porcine Diarrhoea Hypotheses II

- ✓ Toxin production from *Cl. perfringens* type A and prevalence of *Cl. difficile* affects NNPD
- ✓ Therapy with antibiotics initiates NNPD by altering the intestinal flora
- ✓ Diagnosis of herd-specific causes is necessary for an appropriate intervention
- ✓ NNPD can be prevented by changes in management, stabilization of the intestinal microbiota or by vaccination against specific agents identified in the project.

# New Neonatal Porcine Diarrhoea

- **New Neonatal Porcine Diarrhoea**
  - Ph.D. project in epidemiology
  - Ph.D. project in pathology and in situ detection
  - Ph.D. project in microbial ecology
  
- We look forward to present the results