pathologie

bovine viral diarrhea

BVD expert panel

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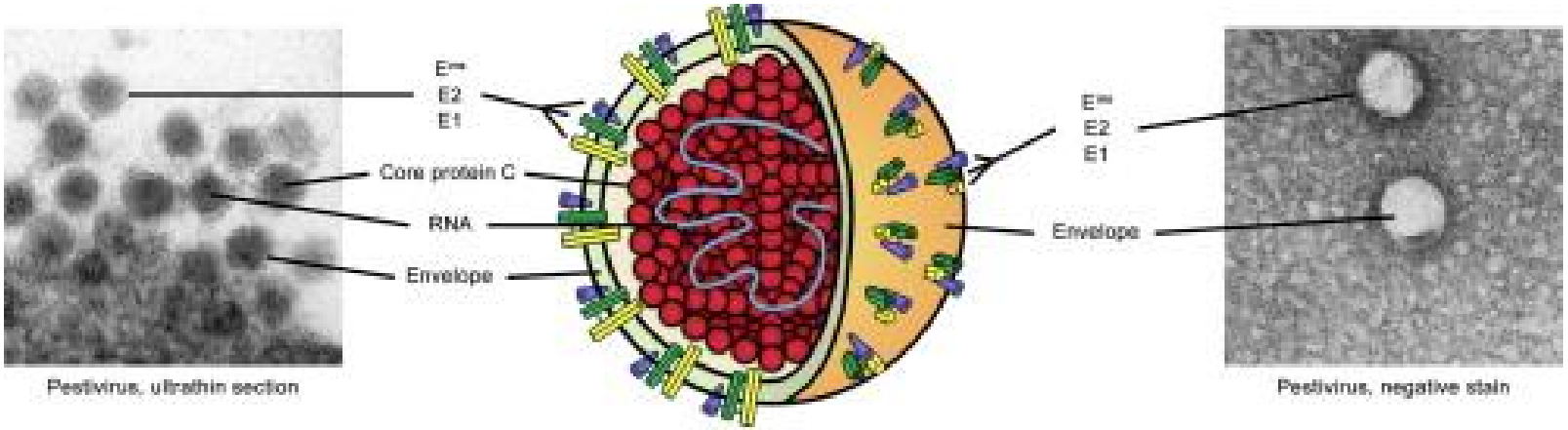
inhoud

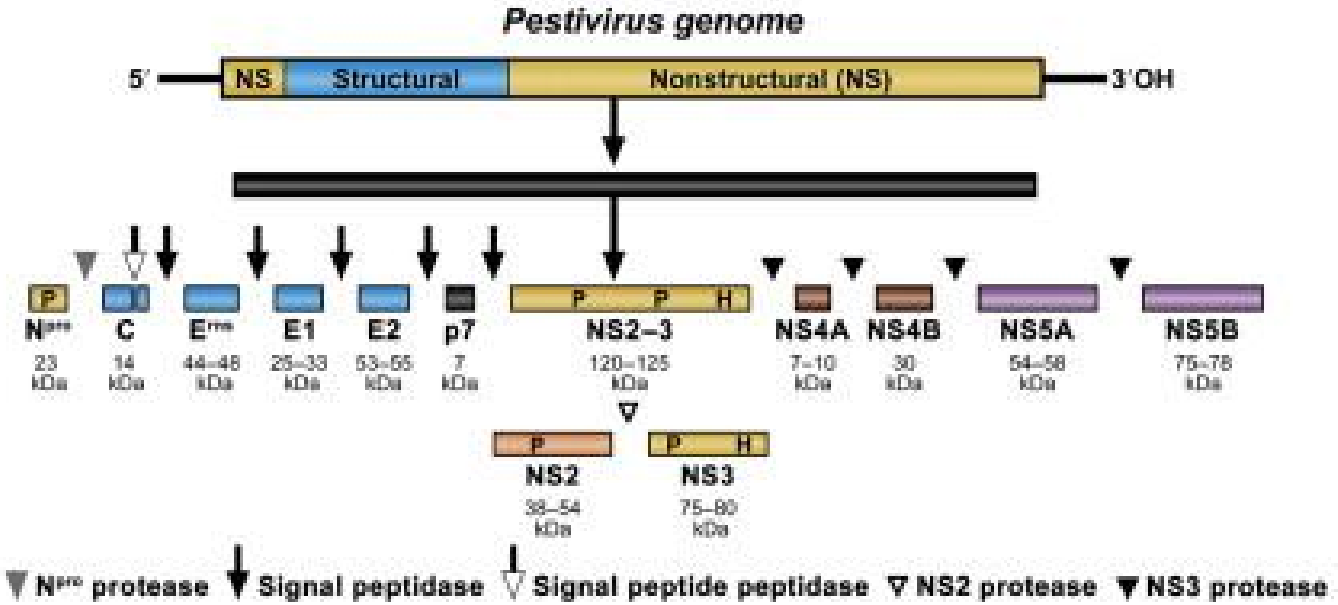
- virus
- pathogenese
- pathologie
  - macroscopie
  - microscopie

BVDv

- enkelstrengs RNA virus
- genus Pestivirus
- species BVDV1 en BVDV2
- subspecies
- biotype ncp - cp
- puntmutaties→genetic drift

Pestivirus


Erns
E2
E1
Core protein C
RNA
Envelope
Erns
E2
E1
Envelope
Pestivirus, ultrathin section
Pestivirus, negative stain

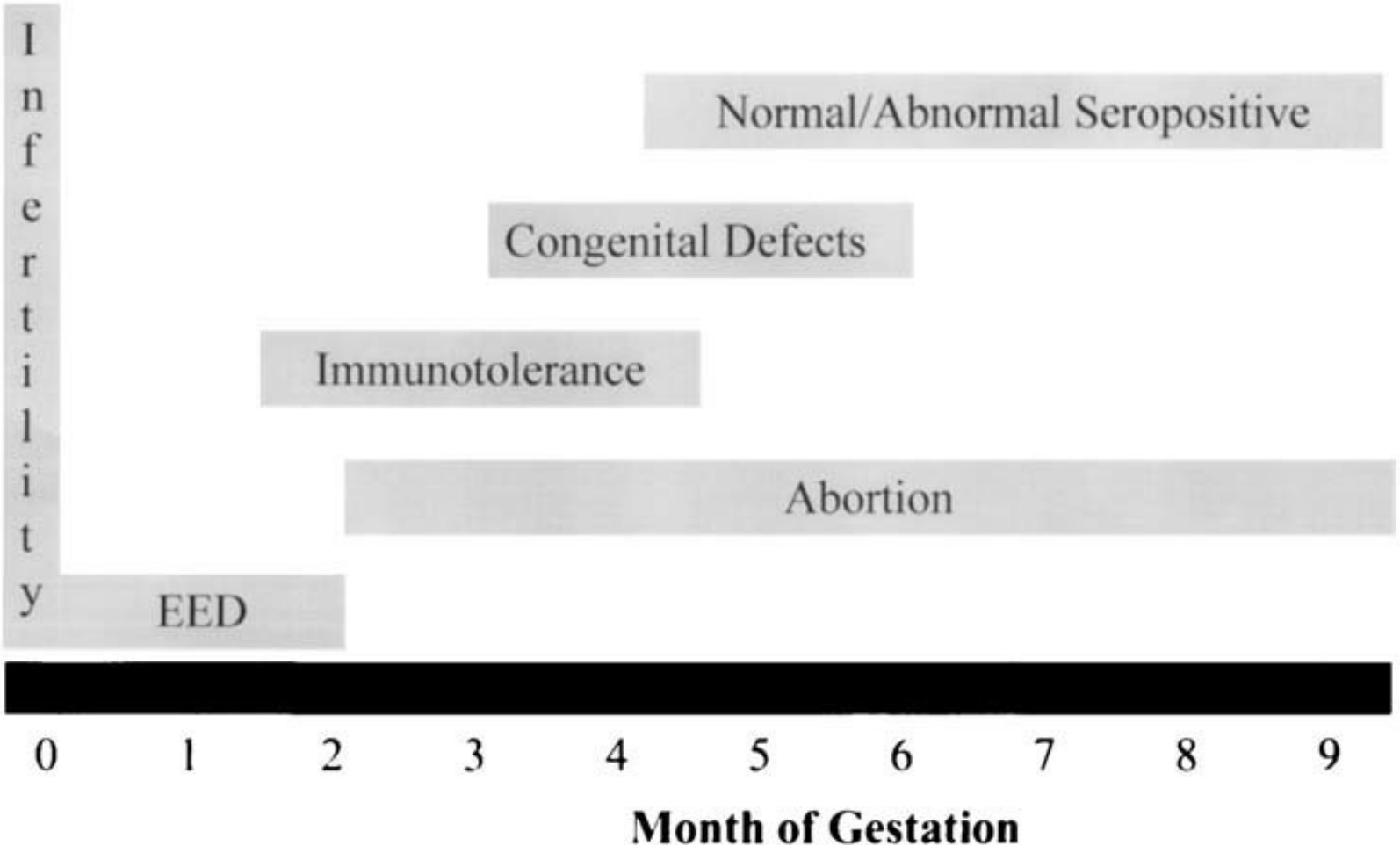

Pestivirus genome
5′
NS
Structural
Nonstructural (NS)
3′OH
P
P
P
H
Npro
23 kDa
C
14 kDa
Erns
44–48 kDa
E1
25–33 kDa
E2
53–55 kDa
p7
7 kDa
NS2–3
120–125 kDa
NS4A
7–10 kDa
NS4B
30 kDa
NS5A
54–58 kDa
NS5B
75–78 kDa
P
P
H
NS2
38–54 kDa
NS3
75–80 kDa
Npro protease
Signal peptidase
Signal peptide peptidase
NS2 protease
NS3 protease

pathogenese
transiënte infectie

- **BVDV1**:
- horizontale verspreiding cp en ncp BVDV
- lymfocyten, macrofagen->viraemie
- GALT en BALT: lymfodepletie-> immunosuppressie
- afh van virulentie: 85% mild subklin verloop
- 15% -> diarree, koorts, lethargie / erosies, ulcera

- **BVDV2**:
- ernstig acuut verloop
- haemorrhagisch syndroom

Effect van BVDv infectie tijdens dracht bij seronegatieve moeder



foetale ncp BVDv infectie

- D40 - D120 -> immunotolerantie
- → **PI** en **permanente uitscheider van BVDv**
- immuungecompromiteerd

- D80 - D150 -> teratogene effecten
- → CNS: cerebellaire hypoplasie, porencephalie, hydranencephalie, hydrocephalus
- oculaire lesies
- thymus, botweefsel, long, vacht

PI kalf - - - > MD

- ncp BVDv -> mutatie / recombinatie -> cp BVDv
- infectie van PI kalf met homoloog cp BVDv

  → **M**ucosal **D**isease

- erosieve/ulceratieve stomatitis, pharyngitis, oesophagitis, ruminitis, abomasitis, ileïtis, typhlocolitis:
- necrose van epitheelcellen -> erosie, ulceratie
- crypte-abcesjes: mucus, debris, leuco's -> dilatatie, ulceratie
- Peyerse Plaques: apoptose lymfo's -> lymfodepletie
- herniatie van crypten in submucosa

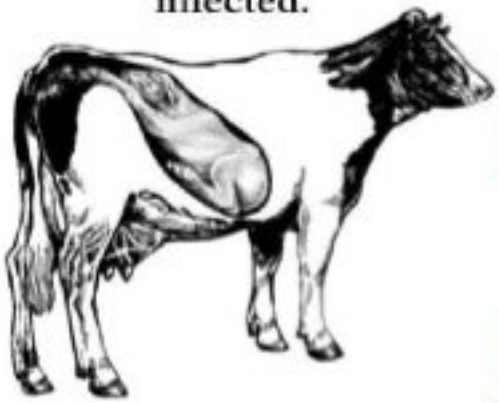
BVDv geïnduceerde immunosuppressie

- BVDv tropisme: lymfocyten, macrofagen, monocyten
- → apoptosis -> lymfodepletie
- IFN type 1 onderdrukt
- CD4 T-cel-gemedieerde respons op geïnfecteerde lymfocyten

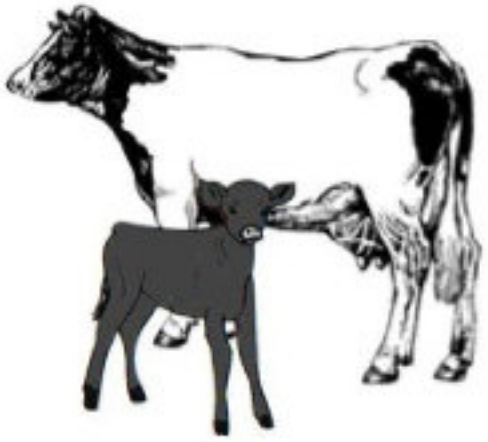
- humorale en celgemedieerde afweer
- afwezig bij PI

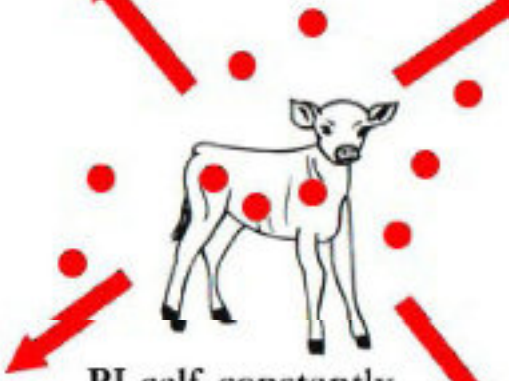
- immuunsuppressie: secundaire infecties

Pregnant female whose fetus may become infected.



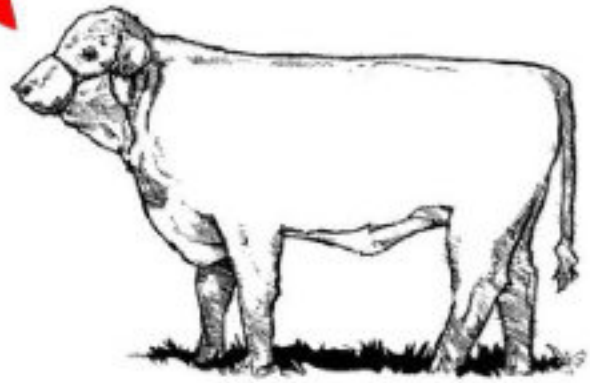
Cow and calf that may both develop acute infections. Cow may suffer from infertility.





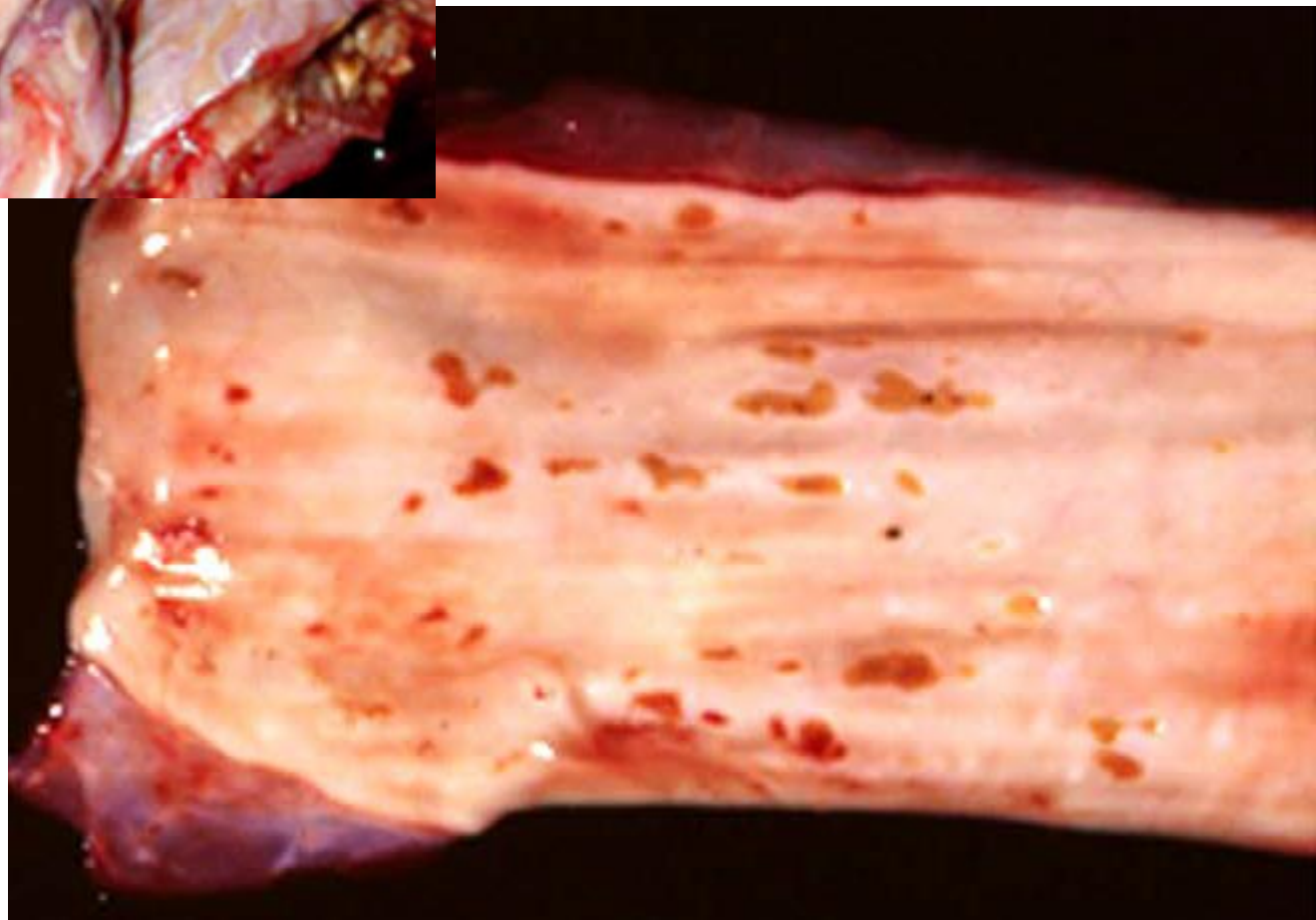
PI calf constantly shedding BVD virus to herdmates

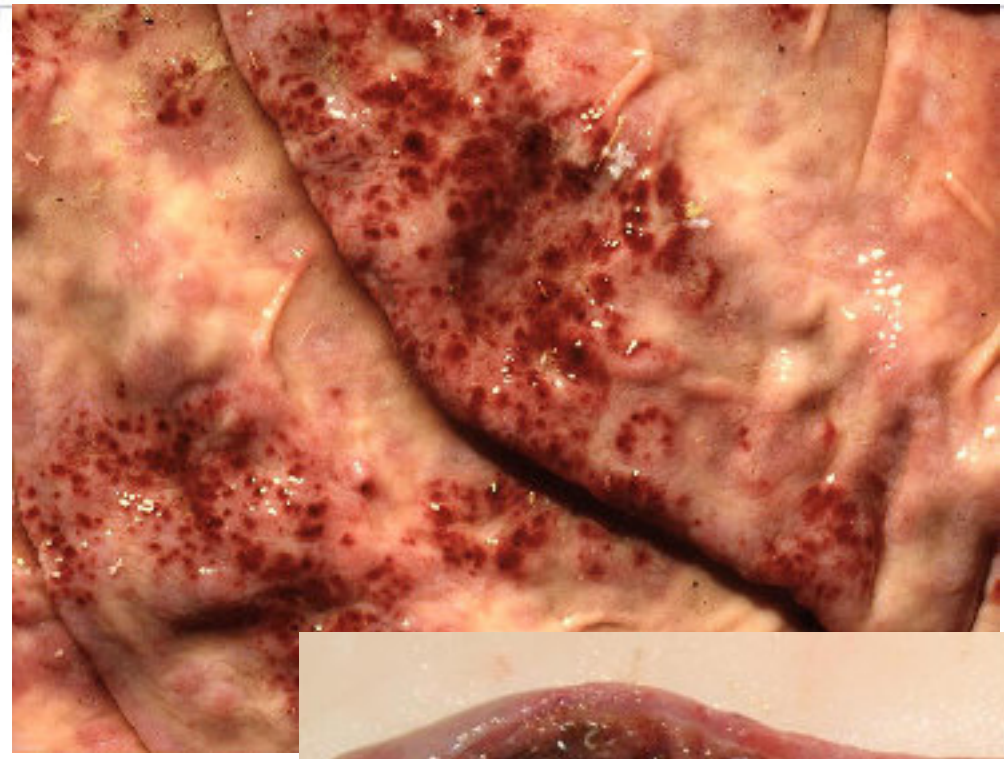
Calves exposed to PI calf may develop pneumonia, diarrhea, etc.



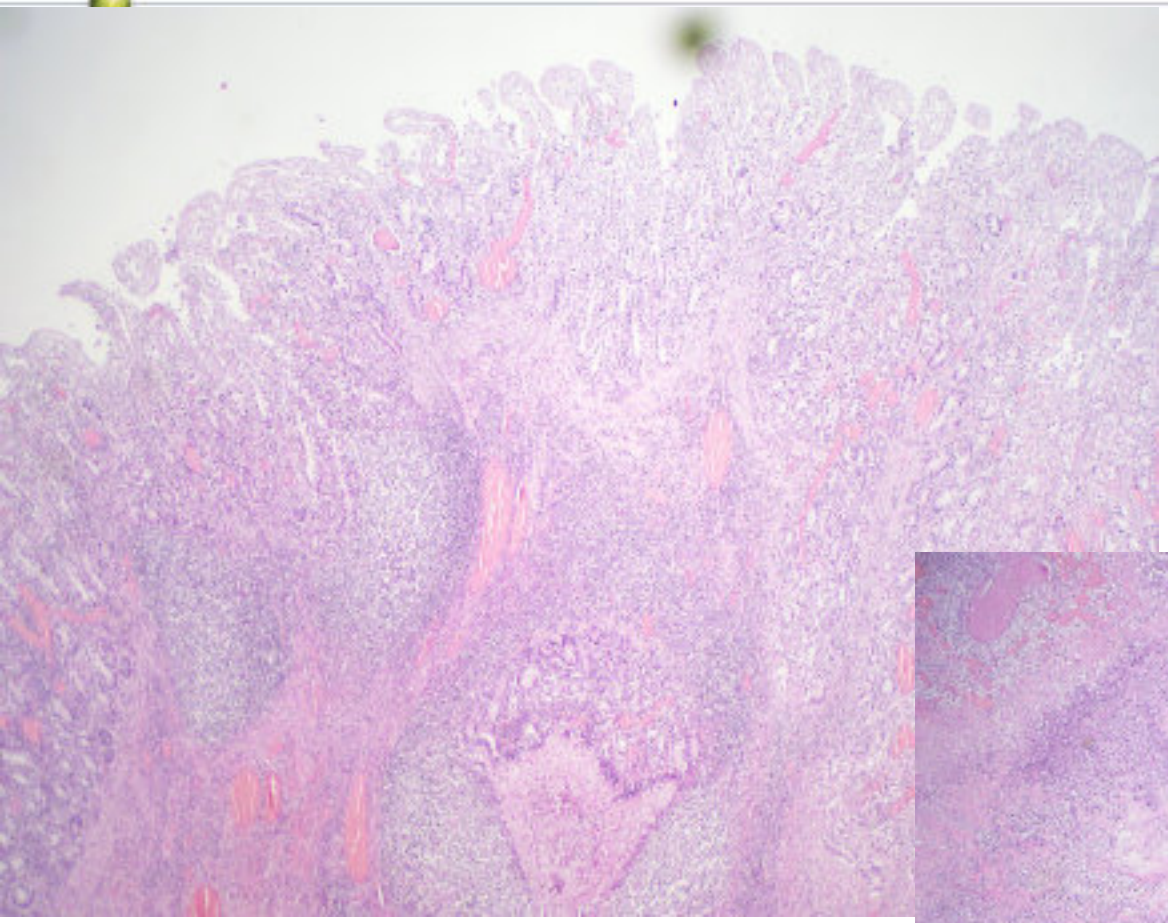
Herd bull that may become acutely infected and then expose cows while breeding.

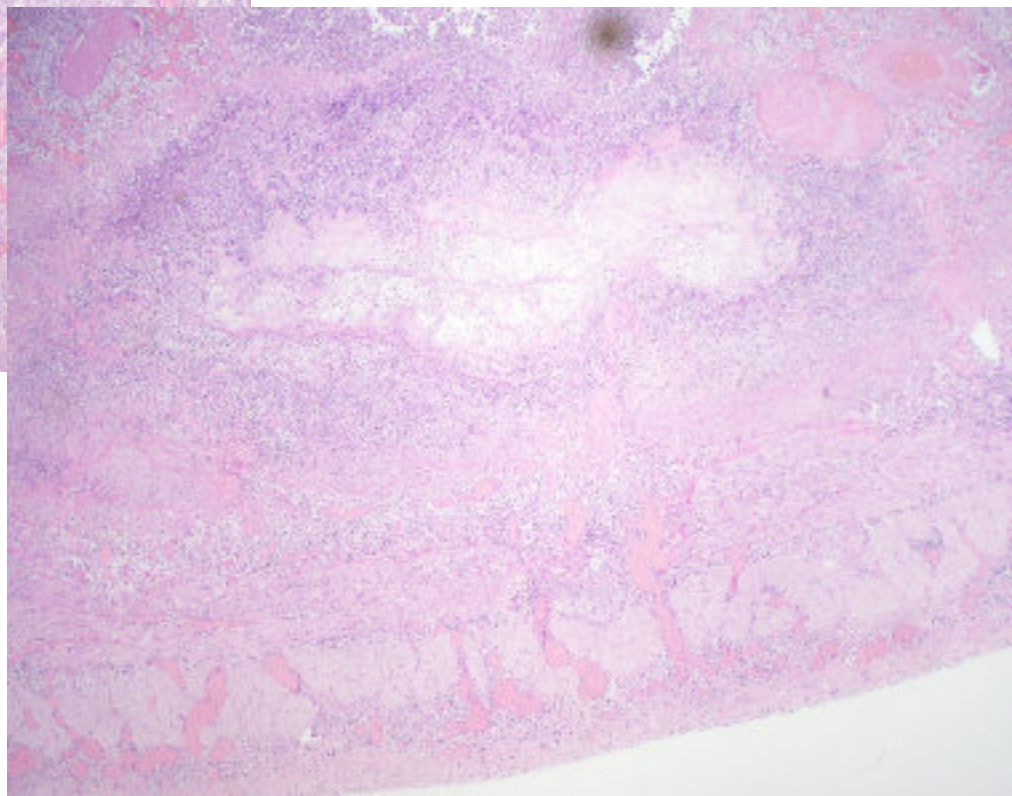

07B 9405

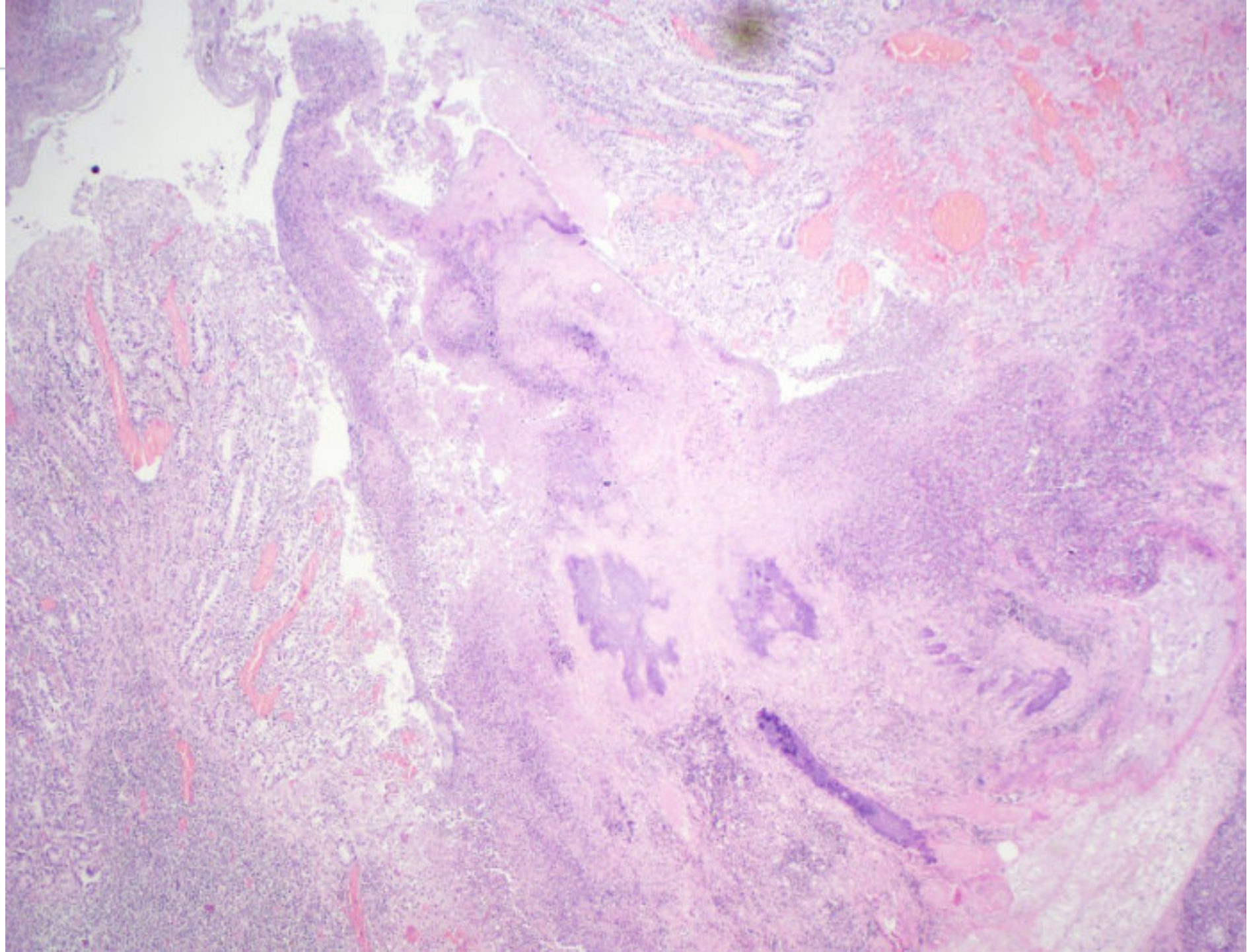


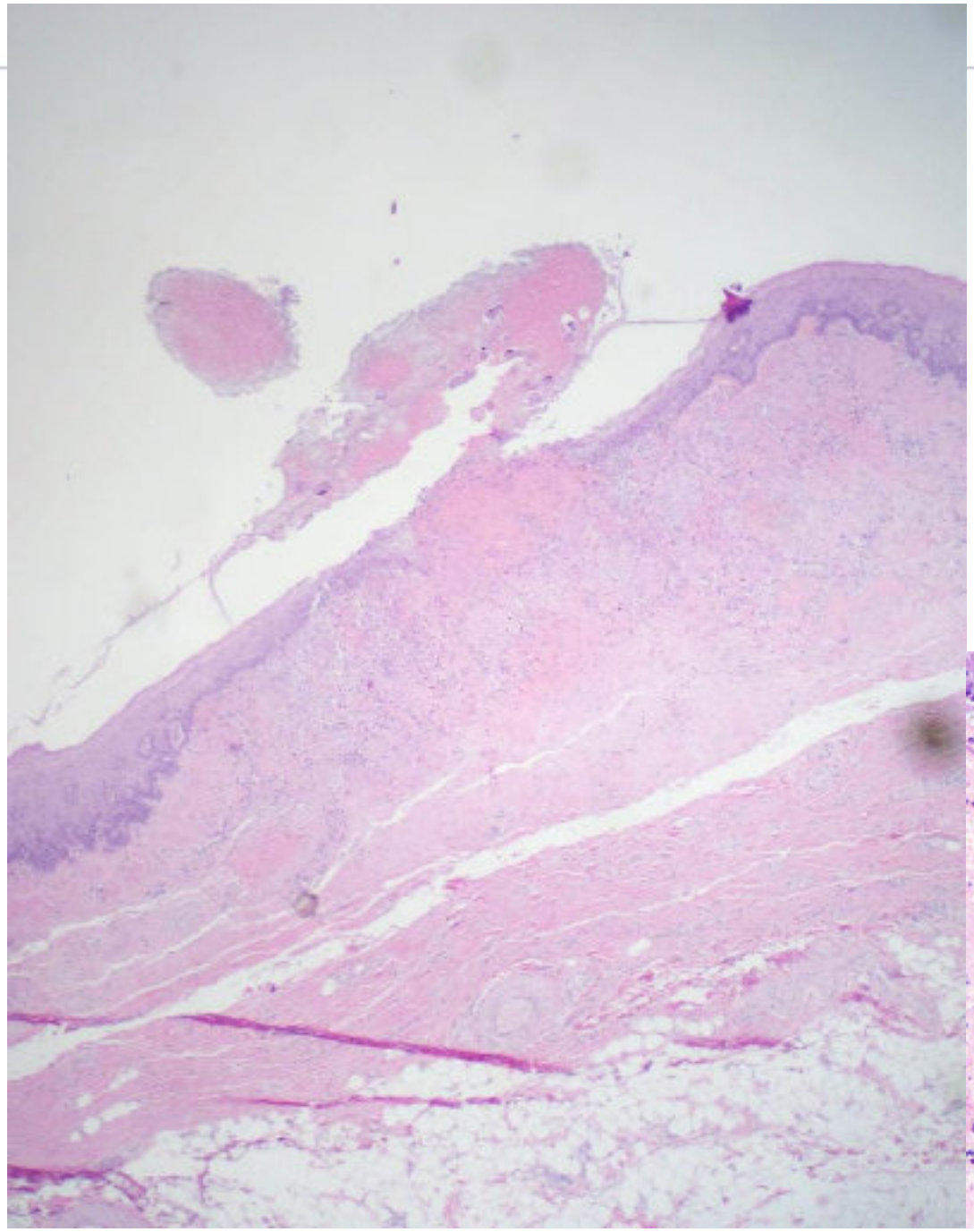


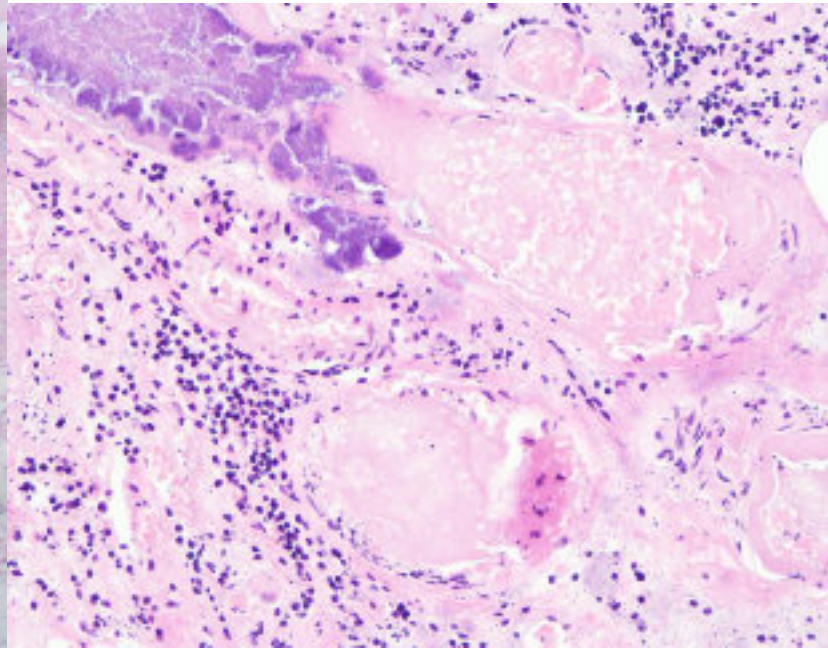

(c) 2012, Richard M. Jakowski, DVM, PhD, DACVP





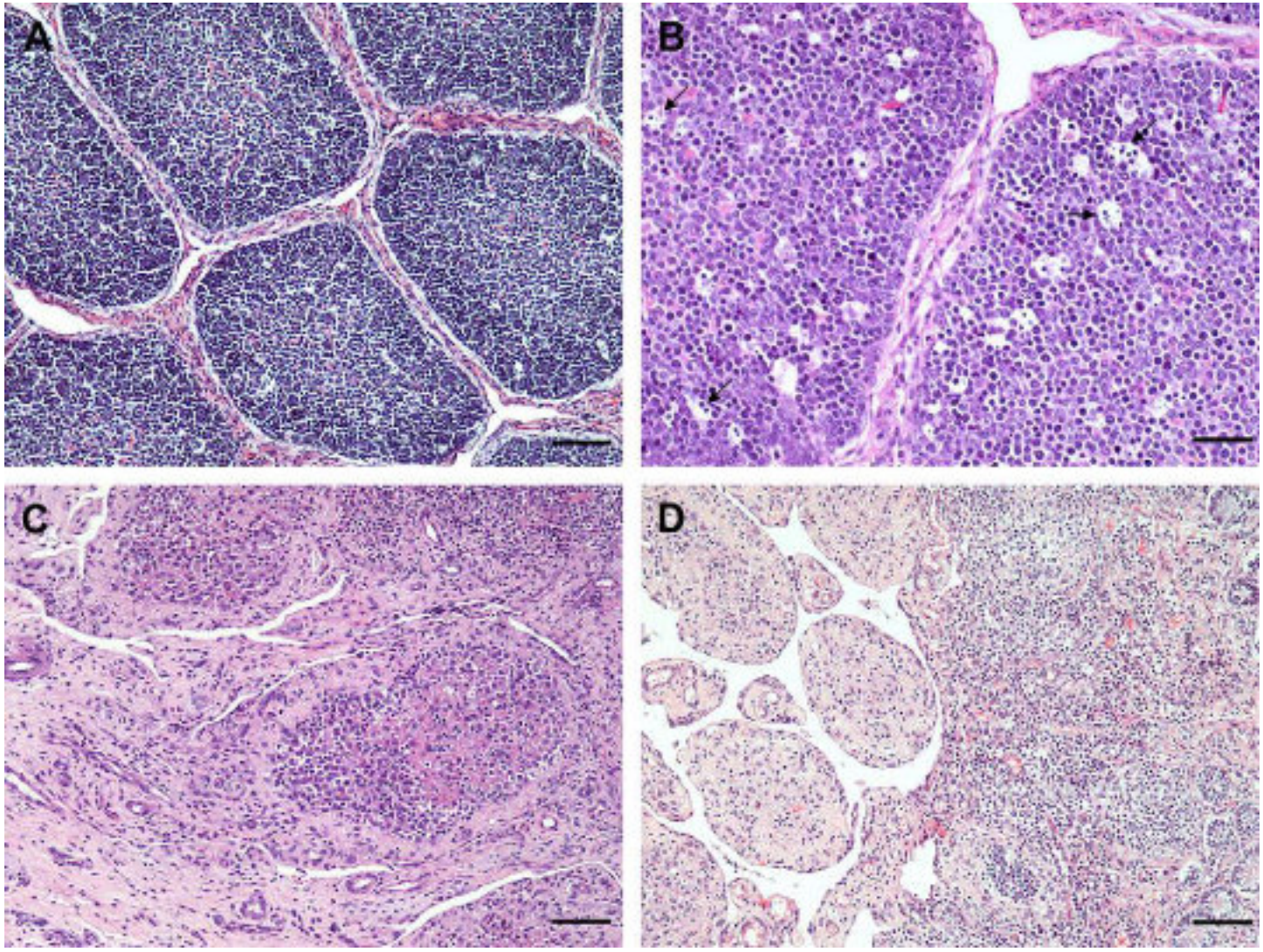






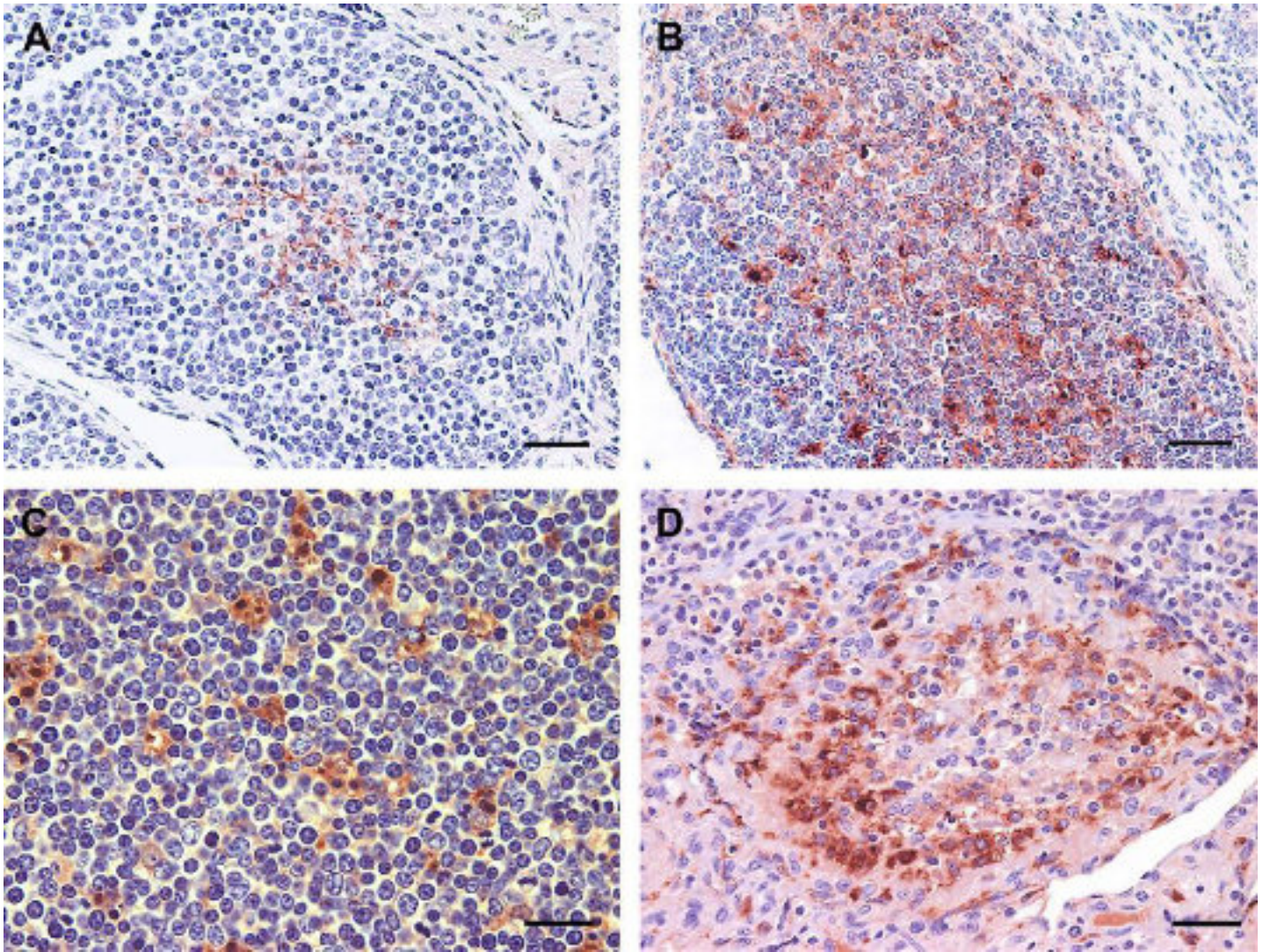
Peyerse plaques: lymfodepletie 14 dpi

J. Comp. Path. 2009, Vol. 141, 52e62 M. Pedrera*, J.

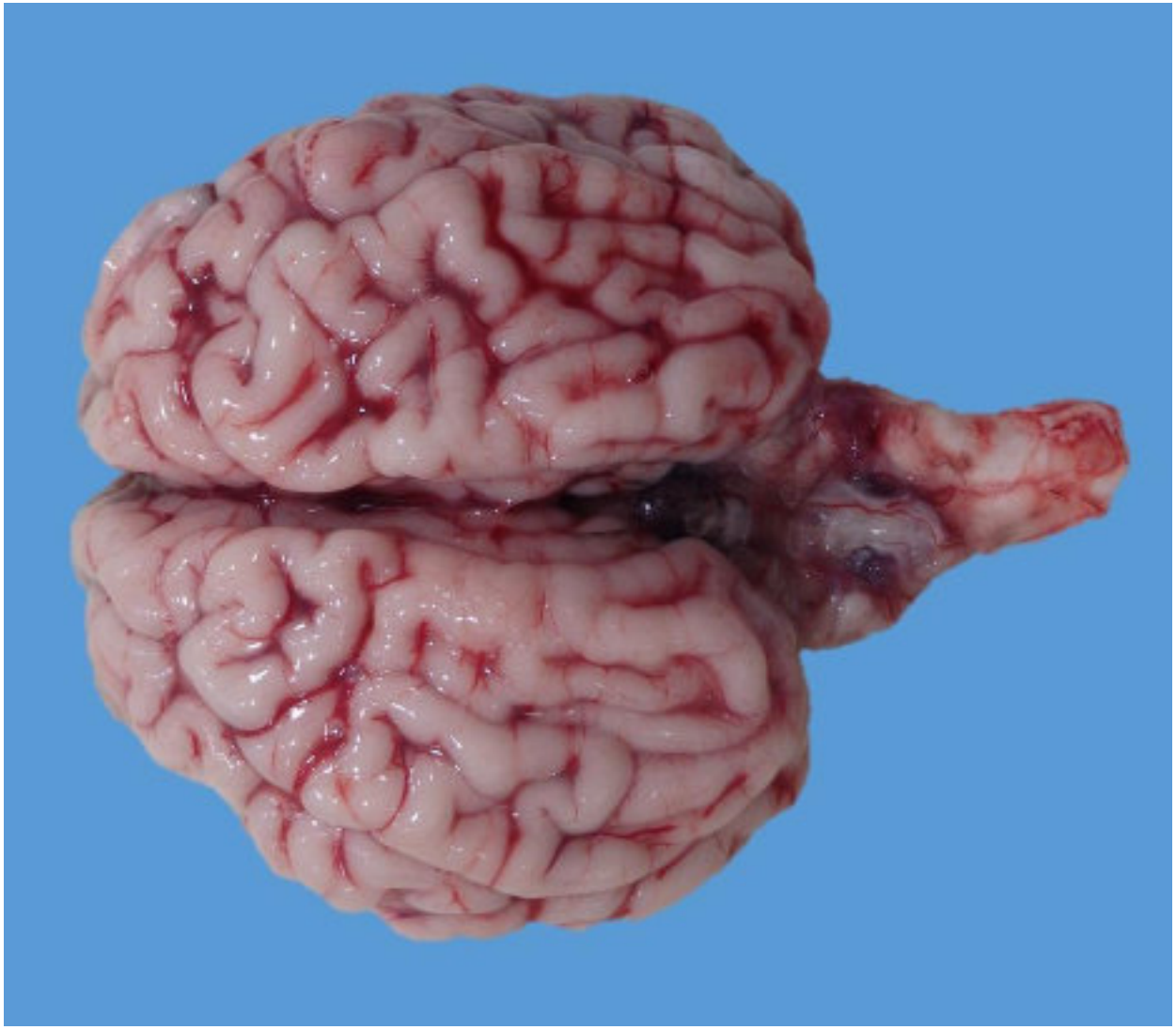


Peyerse plaques: 3-9 dpi

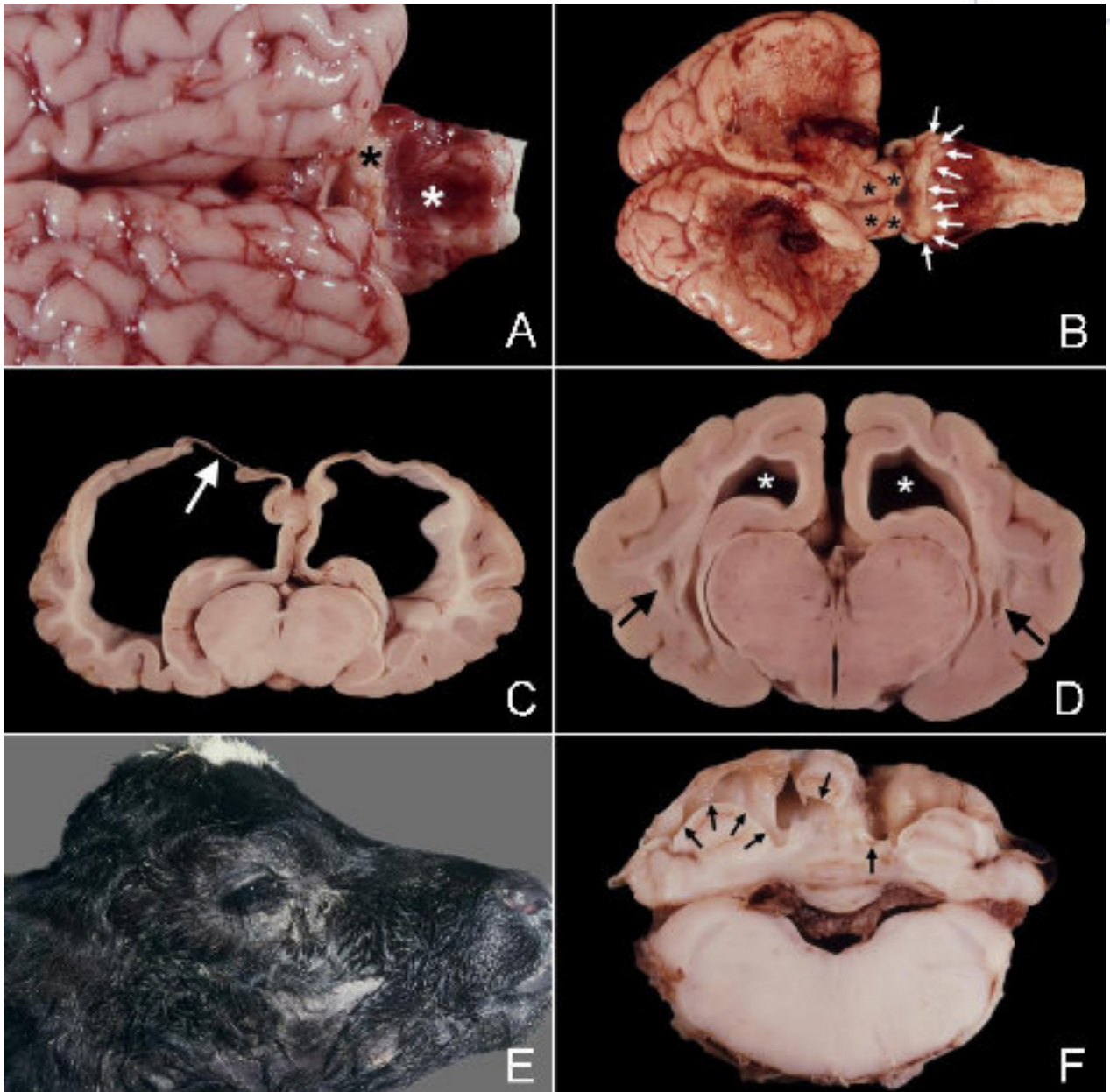
J. Comp. Path. 2009, Vol. 141, 52e62 M. Pedrera*,



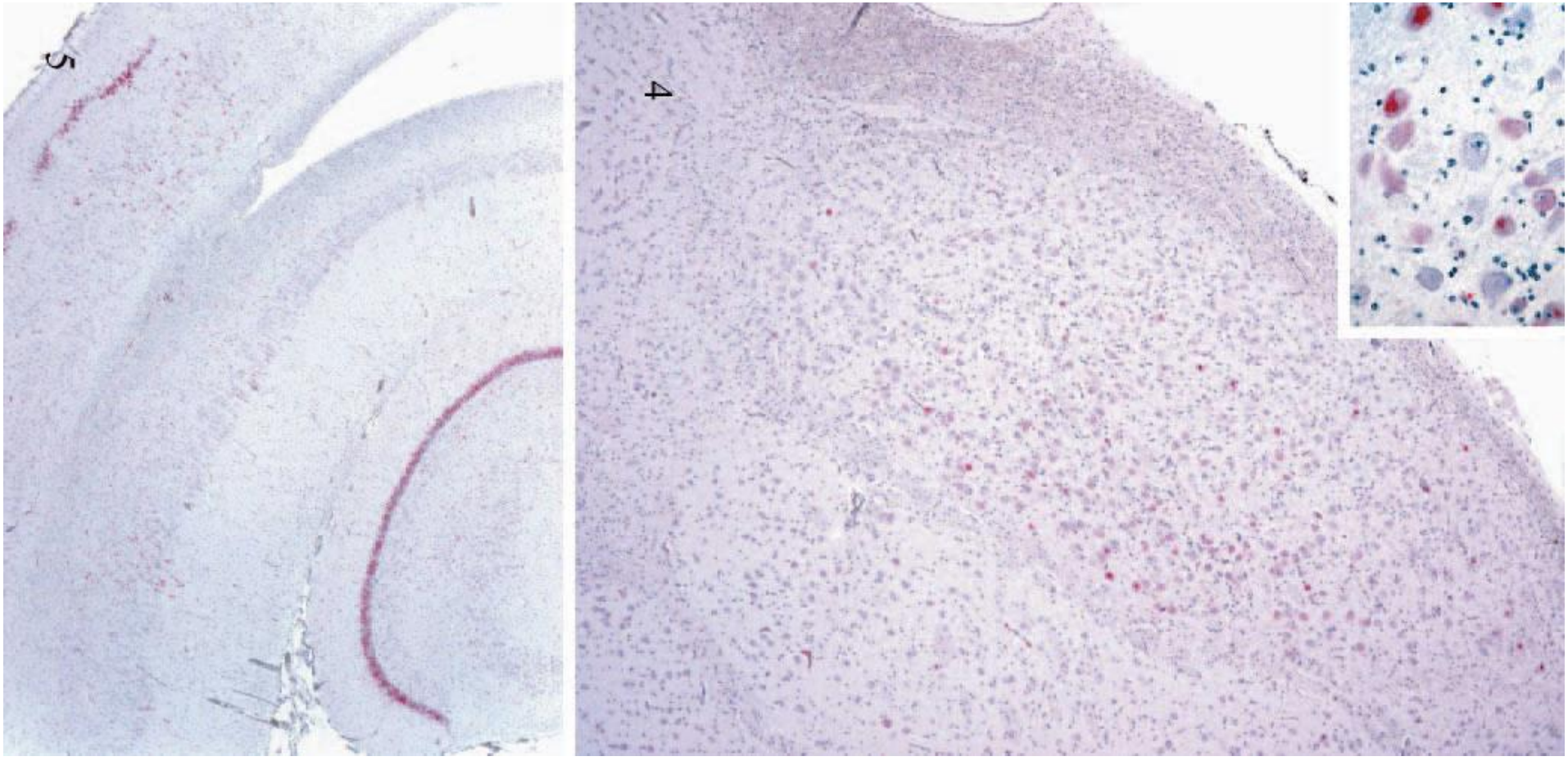
congenitale cerebellaire hypoplasie



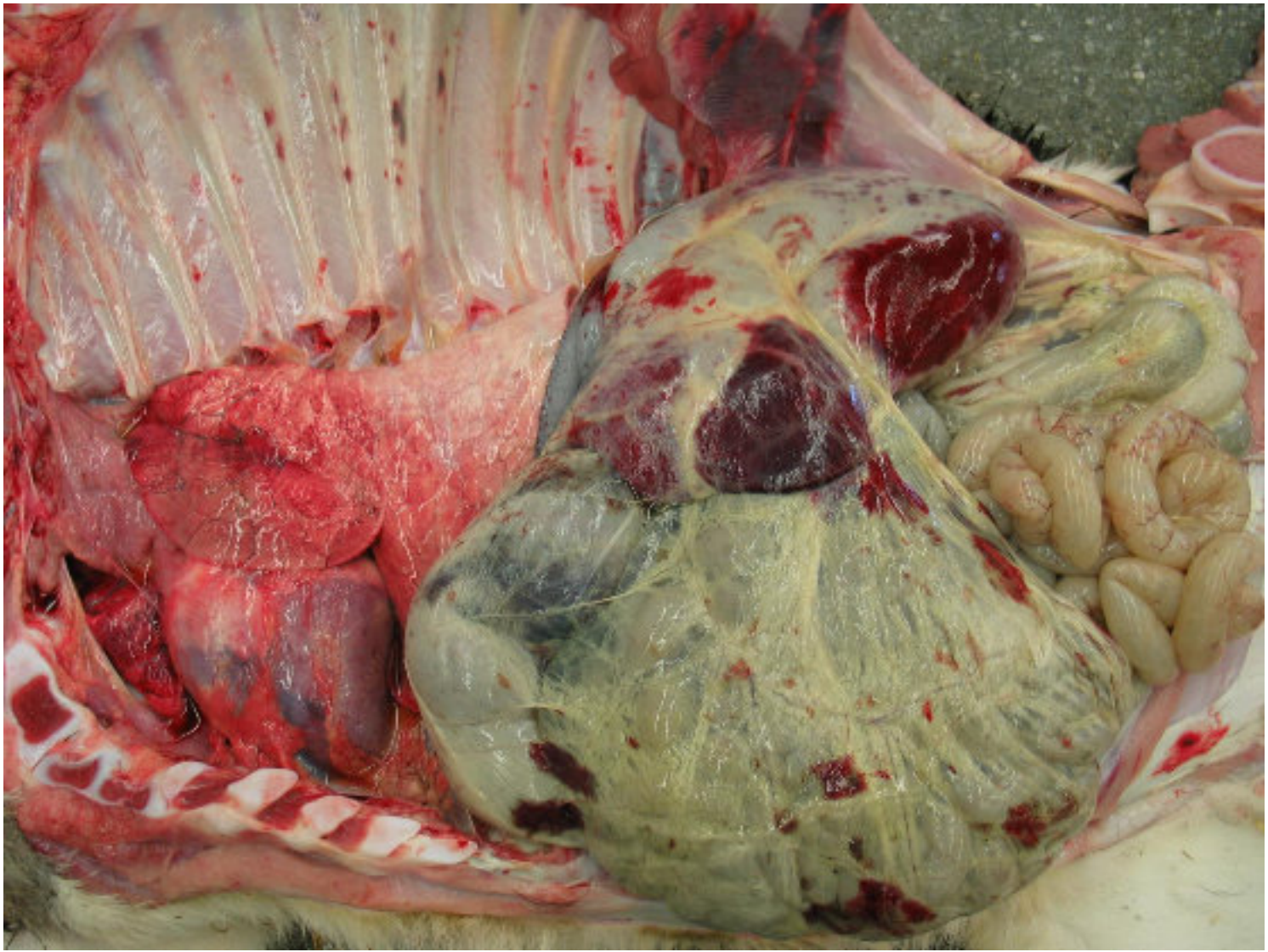
teratogene effecten CZS



thalamus/hippocampus: IHC BVDv neuronen



Haemorrhagisch Syndroom



Uit: GD-Monitoring Diergezondheid

	2013	2014	2015	2016	2017	2018 1e kwart
Diagnose BVD	103	48	33	19	21	5
Abortus BVD	27	18	16	7	8	5

ongewenste bijwerkingen

- BVDv gecontamineerd IBR vaccin 1999
- PI + MLV BVD vaccin -> inductie MD 2001
- BNP: alloantigenen in BVD-vaccin 2007

literatuur

- Bovine Viral Diarrhea Virus Infections: Manifestations of Infection and Recent Advances in Understanding Pathogenesis and Control B. W. Brodersen, DVM, MS, PhD Veterinary Pathology Vol 51, Issue 2, pp. 453 - 464 First Published January 29, 2014
- “Variability and Global Distribution of Subgenotypes of Bovine Viral Diarrhea Virus.” Yeşilbağ, Kadir, Gizem Alpay, and Paul Becher. Ed. Jens H. Kuhn. Viruses 9.6 (2017): 128.
- Bovine viral diarrhoea: Pathogenesis and diagnosis Sasha R. Lanyon a,⇑, Fraser I. Hill b, Michael P. Reichel a, Joe Brownlie cThe Veterinary Journal Volume 199, Issue 2, February 2014, Pages 201-209
- RNA recombination between persisting pestivirus and a vaccine strain: generation of cytopathogenic virus and induction of lethal disease. Becher P1, Orlich M, Thiel HJ J Virol. 2001 Jul;75(14):6256-64.
- Virus-induced congenital malformations in cattle Jørgen S. Agerholm, Marion Hewicker-Trautwein, Klaas Peperkamp, and Peter A. Windsor Acta Vet Scand. 2015; 57(1): 54.
- Morphological Changes and Virus Distribution in the Ileum of Colostrum-Deprived Calves Inoculated with Non-Cytopathic Bovine Viral Diarrhoea Virus Genotype-1 J. Comp. Path. 2009, Vol. 141, 52e62 M. Pedrera*, P. J. Sa´nchez-Cordo´n*, J. L. Romero-Trevejo*, M. A. Risalde*, I. Greiser-Wilke†, A. Nu´ ~nez‡ and J. C. Go´mez-Villamandos*

Dank voor uw aandacht


Heeft u vragen?