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# Update on pregnancy loss

Mandi de Mestre

Equine Pregnancy Laboratory



## Equine Pregnancy Laboratory

Dr Belinda Rose

Dr Jess Roach

Dr Daniel Hampshire

Dr Anne Kahler

Harriette Smart

RVC undergraduate students

## Collaborators

Prof Kristien Verheyen

Prof Claire Wathes

Dr Ruby Chang

Alastair Foote, RosSDales Laboratories



ROSSDALES  
VETERINARY SURGEONS



Animal Health Trust



Jennie Henderson, Ireland

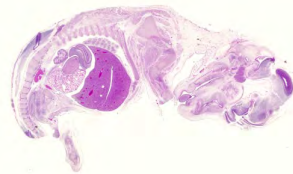
James Crabtree, Yorkshire

Helen Tuyll, Oxfordshire

Thoroughbred Stud farms

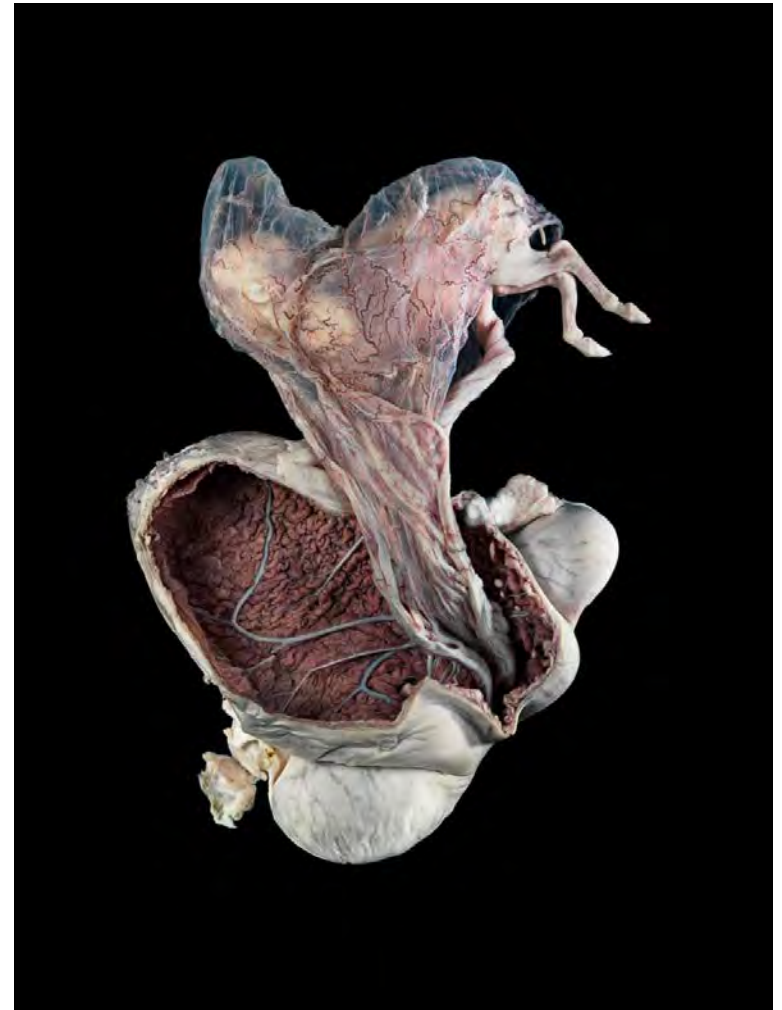
Prof. Terje Raudsepp, Texas A and M

# Equine pregnancy



When it goes wrong:

- 8% fail 15 to 65 days
- 5.5% fail 65 days to birth



Wellcome Trust Image Award, 2015,  
Royal Veterinary College

# What will I cover today?

- Impact of pregnancy loss on breeding operations- why do we need to know more?
- Early pregnancy loss
  - Risk factors for early pregnancy loss
  - Causes of early pregnancy loss
- Abortion
  - Causes

# Putting Pregnancy Loss in context



Reduce the occurrence  
or  
Diagnose quickly and  
rebreed---→ cause?

LOSS

- Lost earnings
- Vet Fees
- More interventions
- Sales process

# What steps are plausible to reduce the impact of PL on your breeding operation?

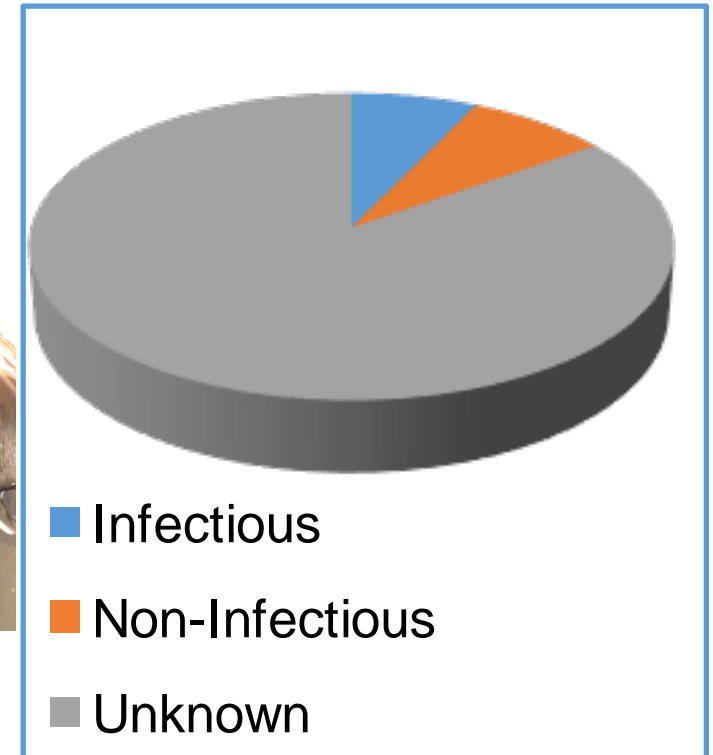
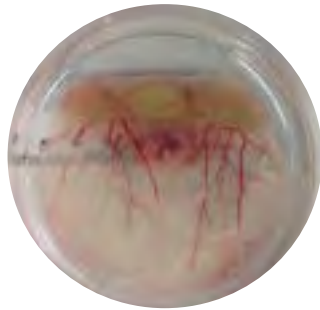
## CAUSE OF PREGNANCY LOSS RISK FACTORS

- Know the cause
  - can take steps to reduce the chance of repeats
  - can put in place mechanisms to reduce impact on other mares in your herd
  - could manage breeding choices to minimise it occurring again
- Know the risk factors
  - minimise exposure to those risks and change herd composition



# EARLY PREGNANCY LOSS

# Early pregnancy loss (EPL)





RISK FACTORS EPL

## Why Risk Factors for EPL?

- Reduce risk of EPL
- Inform management of herd composition
- Generate hypotheses



Clinical cases of EPL

# Managing risks to minimize early pregnancy loss

## Modifiable

Drugs to induce ovulation  
decrease risk

Fluxinin at time of twin  
reduction decrease risk

Endometrial Cysts

Body Condition Score  
between 15 and 35 days  
pregnancy



## Management

Size of early embryo-  
monitor

Mare Age

>1 Live foals

## How can risk factors help you?

<b>Mare characteristics</b>	<b>OR</b>
5 yo mare off track	1.0
8 year old mare that has had one live foal	4.7
15 year old mare that has had 7 live foals and endometrial cysts	9.1
18 year old mare that has had 9 live foals	7

# TREATMENTS IN EARLY PREGNANCY

- How can we use these risk factors to manage pregnancies?

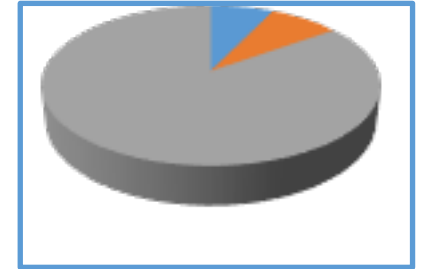


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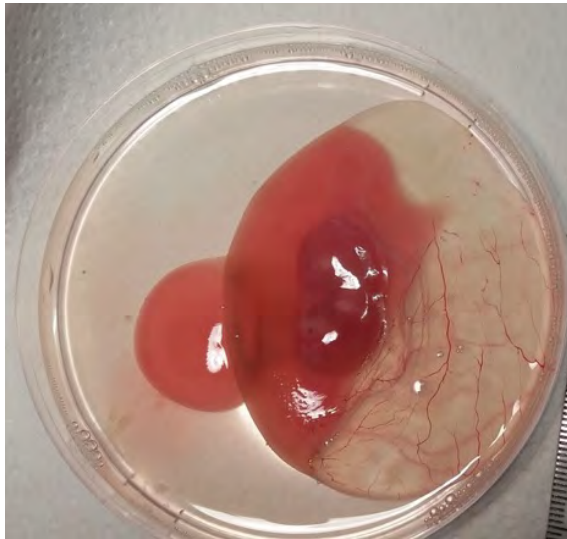
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# CAUSES OF EPL

# How do we identify causes of EPL?

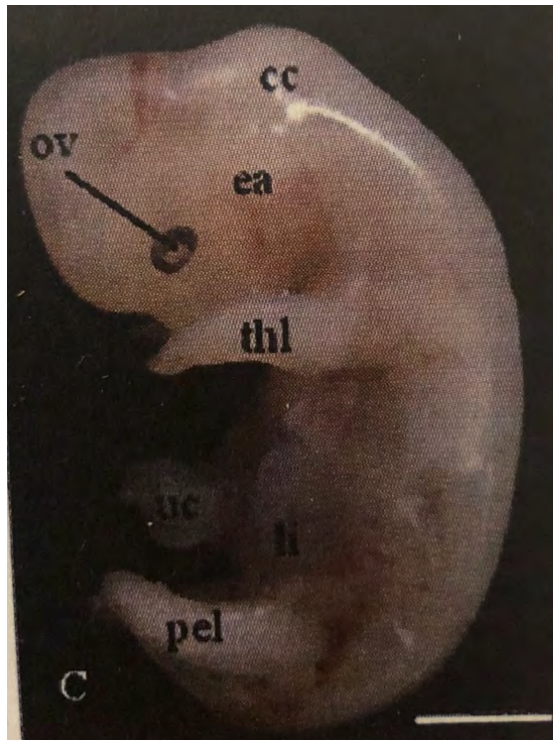


- Need to look!! You can get this tissue to assess 25-40% cases.

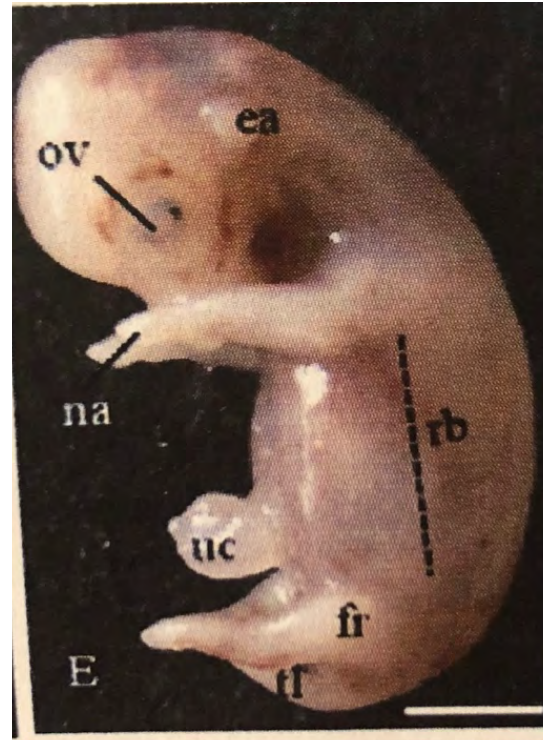


- What is causing the loss?

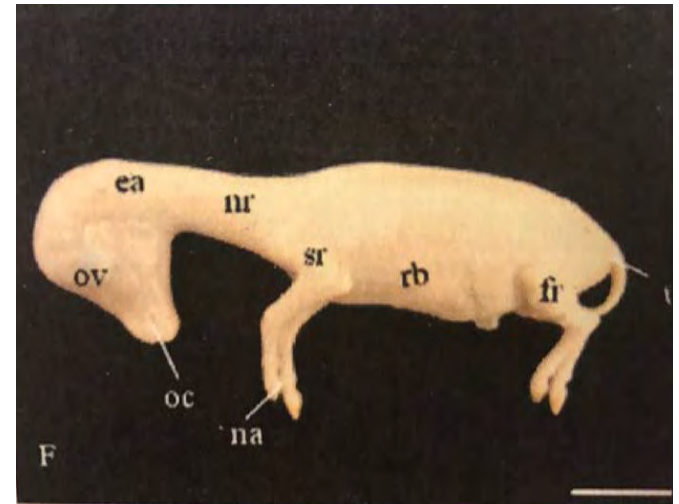
# Early development



Day 36



Day 40



Day 54



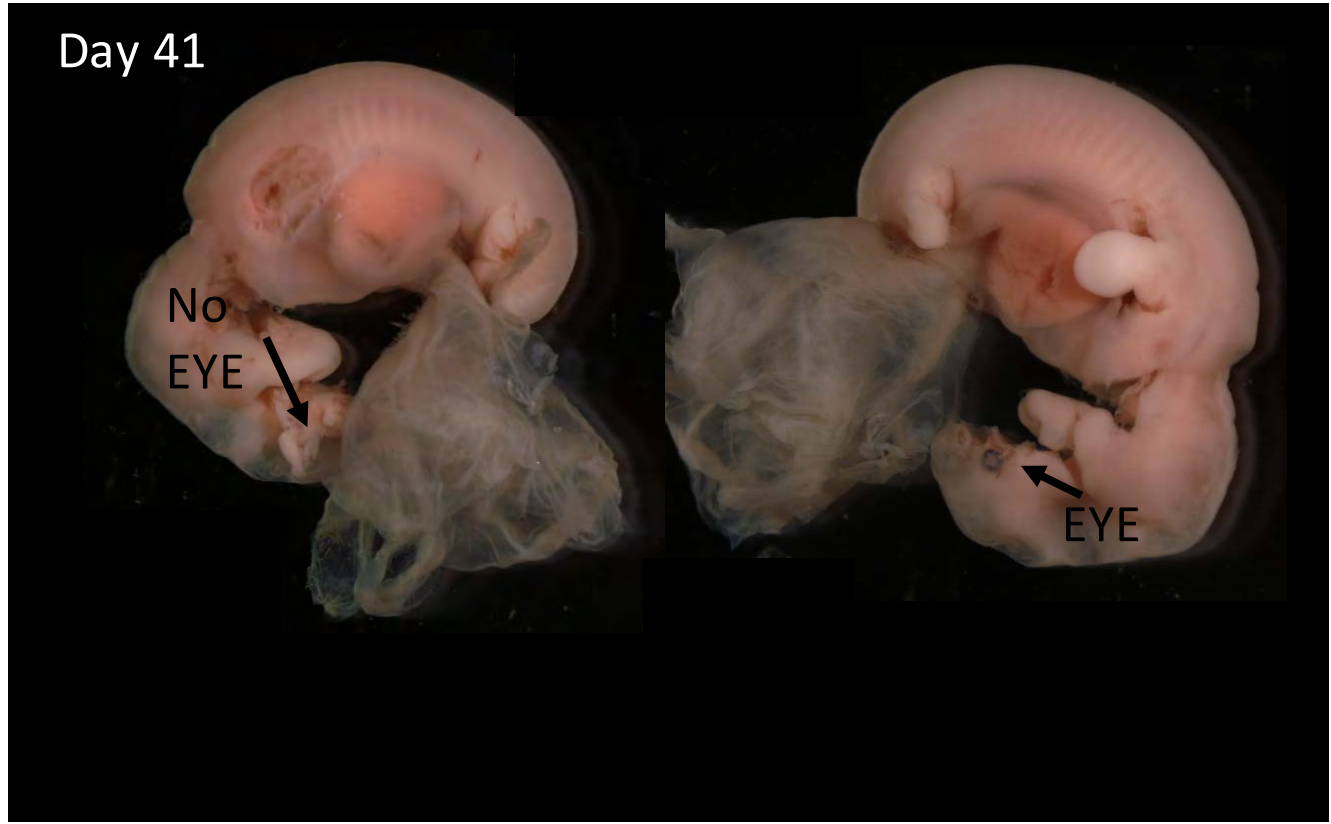
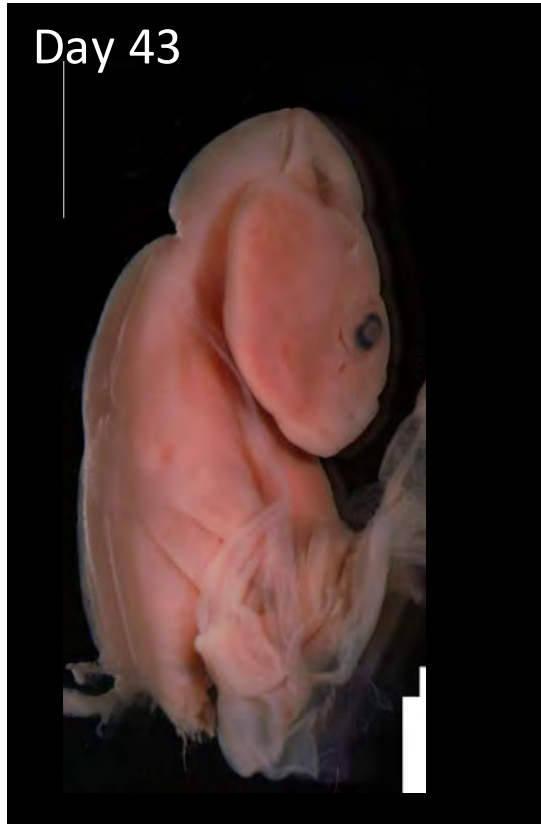
# Fetal abnormalities causing early pregnancy loss

Identified 4 gross fetal abnormalities from 13 studied in 2018



Anne Kahler

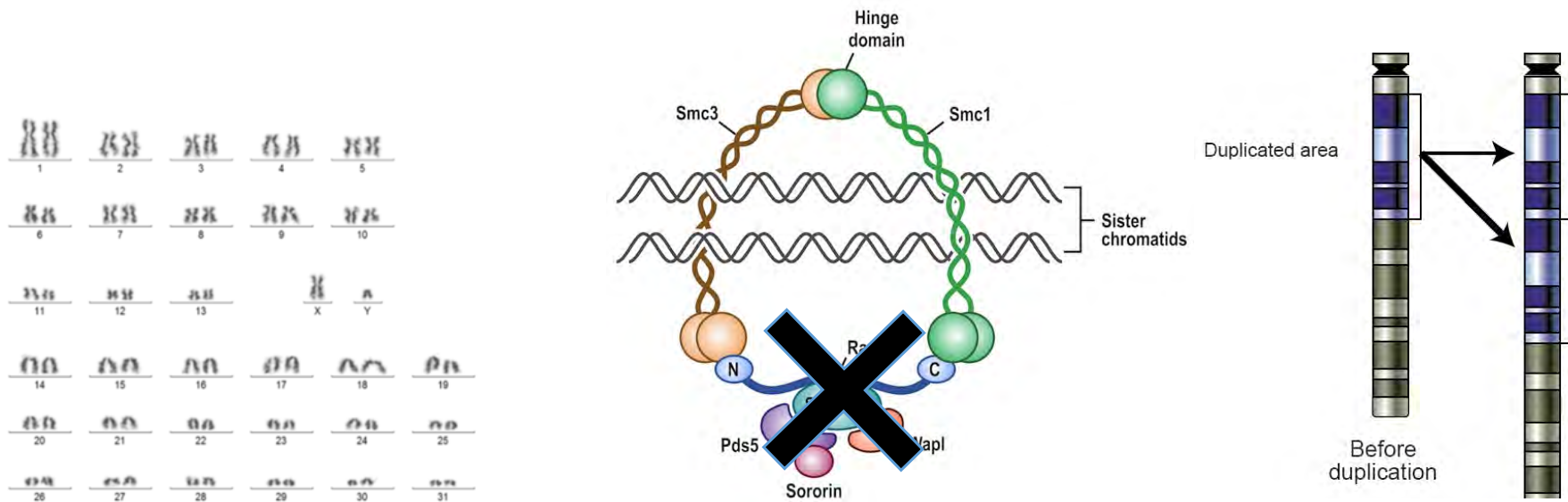
# Fetal abnormalities causing early pregnancy loss



Anne Kahler

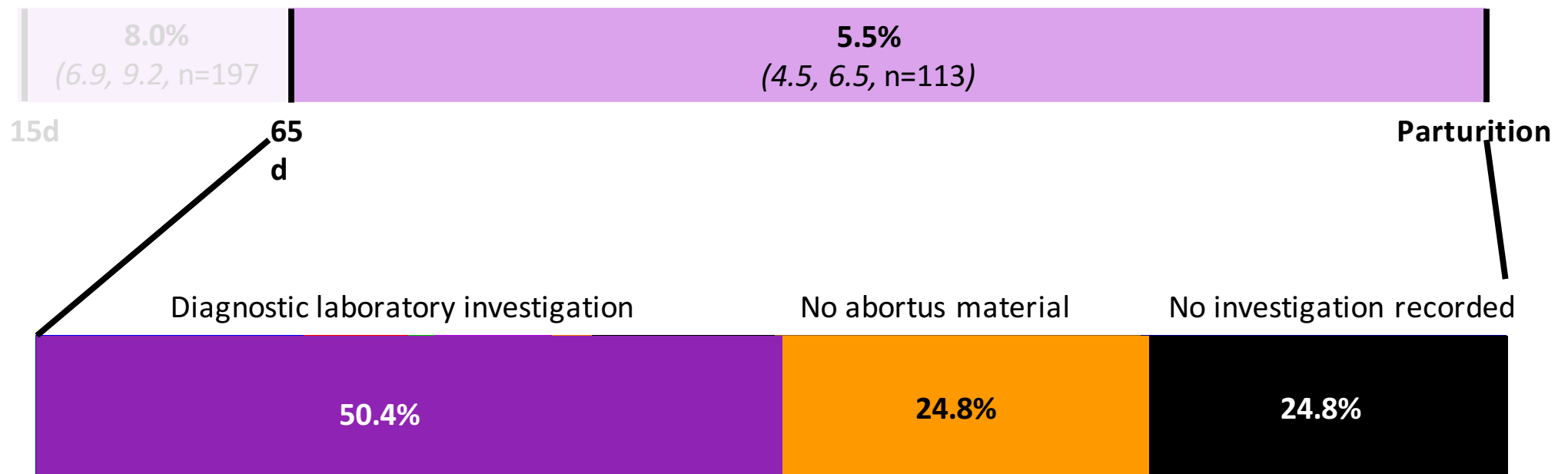
# Why are these failing?

- Underlying genetic structural changes?
- Exposures are critical periods in development?



ABORTION

# How many TB mares abort and what happens next?

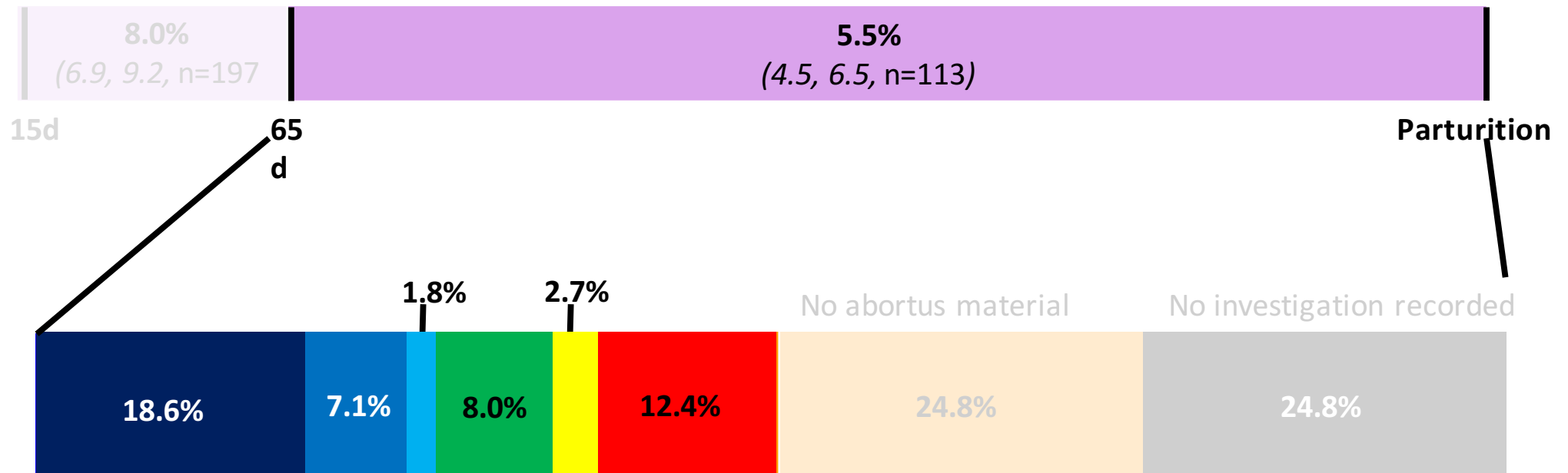


**RVC**

- Umbilical cord torsion
- Suspected umbilical cord torsion
- Ischaemic necrosis
- Placental pathologies
- Intrapartum stillbirth
- No primary diagnosis
- No abortus material found
- No investigation

Jessica Roach

# Causes of abortion



**RVC**

- Umbilical cord torsion
- Suspected umbilical cord torsion
- Ischaemic necrosis
- Placental pathologies
- Intrapartum stillbirth
- No primary diagnosis
- No abortus material found
- No investigation

Jessica Roach

How does the UK compare to other regions around the world?

Kentucky 2008-2018



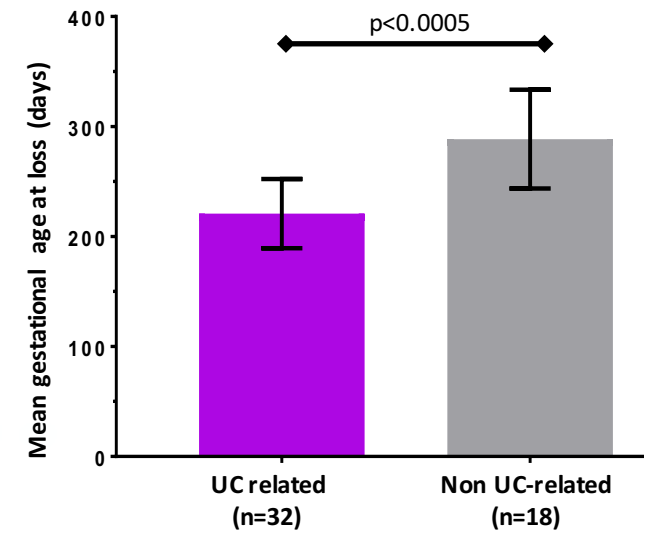
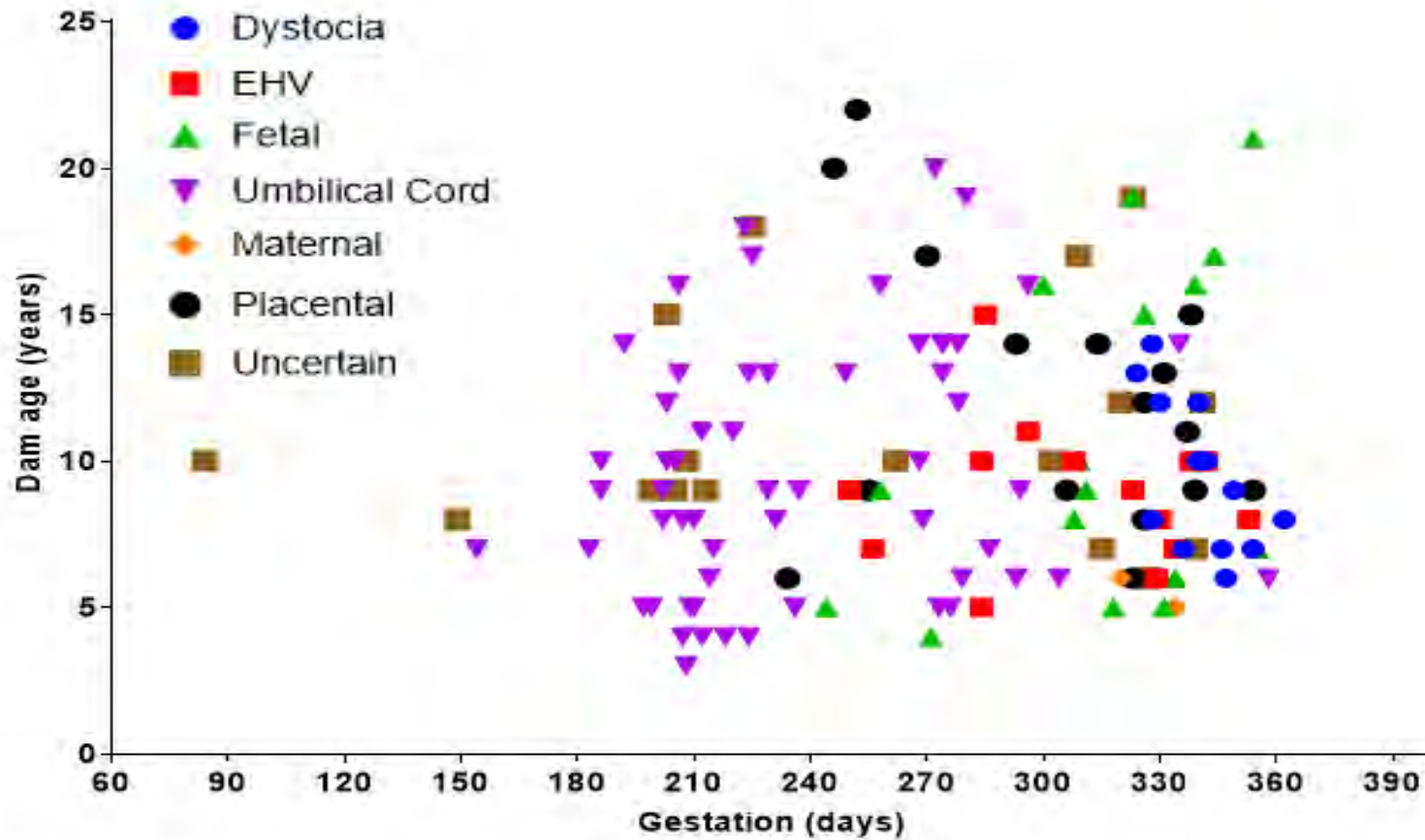
- Ascending placentitis; EHV; Leptospirosis

Australia







- Ascending placentitis and other infectious; Umbilical cord torsions

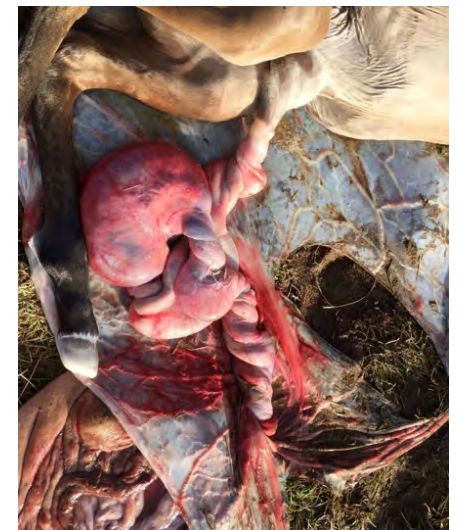
# Pregnancy Losses Day 65 and term





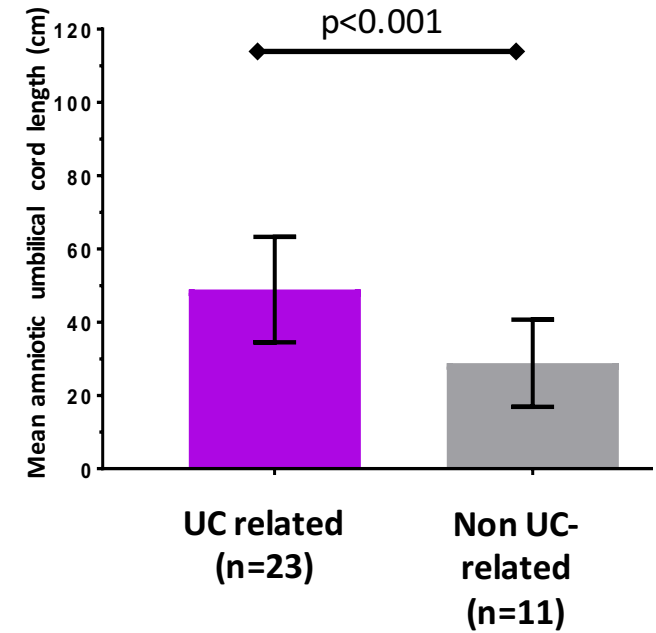
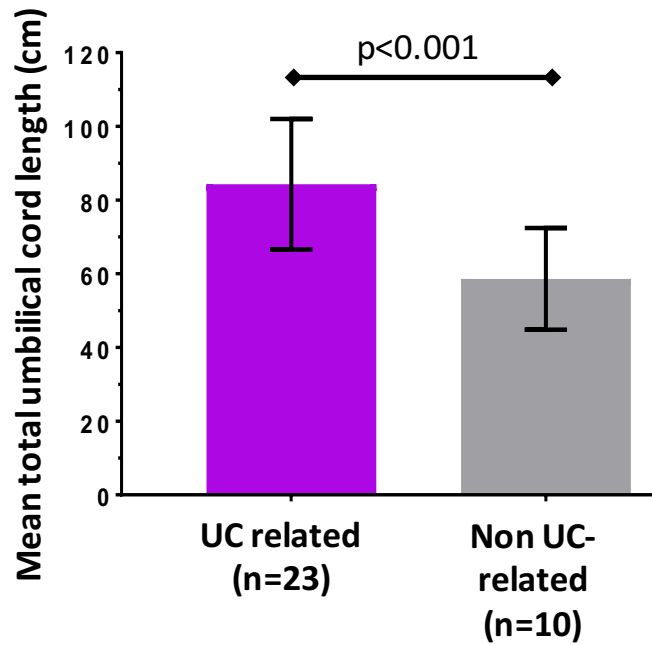
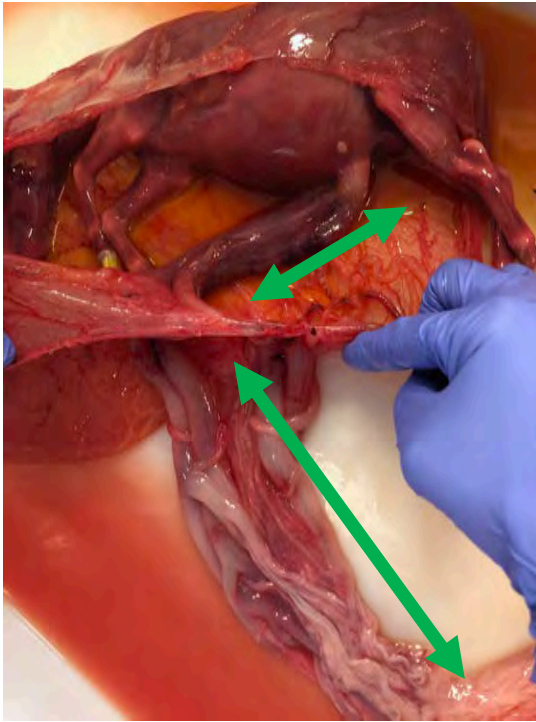
# UMBILICAL CORD TORSIONS

	Study and Location of Study Population	% of cases attributed to UC Pathology
	Smith et al. 2003 <i>Newmarket, UK</i>	38.8*
	Carrick et al. 2014 <i>New South Wales, Australia</i>	23*
	Laugier et al. 2011 <i>Normandy, France</i>	16.5
	Hong et al. 1993 <i>Kentucky, USA</i>	4.5



With thanks David Dugdale

# Features of umbilical cord related abortions



## Risk factors and aetiology of umbilical cord torsions

- ✓ .....
- ✓ .....
- ✓ .....
- ✓ .....
- ✓ .....

## Take home messages...Data, data....

- ▶ Pregnancy loss is an outcome not a disease in own right- diagnosing cause is critical if we are to improve management of pregnant mares – productive EPL √ Abortion X
- ▶ Risk factors- reduce or manage herds EPL √ Abortion X
- ▶ International variation in known causes of abortion- important to remain aware
- ▶ Umbilical cord torsions remain by far the most common cause UK- underlying aetiology unknown
- ▶ Very grateful for your submissions- we are starting to make headway in this field, we welcome the opportunity to continue to work together





## New HBLB-funded study: Does early life experience affect injury risk and performance in later life?

### Main Aims

- > To improve our understanding of wastage in young Thoroughbreds between birth and entering race training
- > To establish whether early exercise is associated with musculoskeletal health and race performance in later life

### How?

- > Recruit a birth cohort of ~700 foals (2019 crop) that we will monitor until the end of their 3yo career (and hopefully beyond!)
- > Collect and analyse data on foal and juvenile management including exercise, diet, maternal factors as well as injury and performance data

**RVC**

[kverheyen@rvc.ac.uk](mailto:kverheyen@rvc.ac.uk)

[ademestre@rvc.ac.uk](mailto:ademestre@rvc.ac.uk)

## Are you in?

