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Some new ideas about lameness reduction which stem from recent UK research initiatives

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EXCELLENCE THROUGH KNOWLEDGE & COMMUNICATION

Let us first look at the four main lesion types which cause lameness in dairy cows

1: Digital Dermatitis

2: Sole Haemorrhage

3: Sole Ulcer

4: White Line Disease

What is covered in this presentation

1. Digital cushion - the fat pad story
2. The increased risk during the period around calving
3. Bone changes in the foot
4. The importance of early treatment and NSAIDs
5. Trimming - correct toe length
6. Digital Dermatitis - an update

1: The fat pad story (digital cushions)

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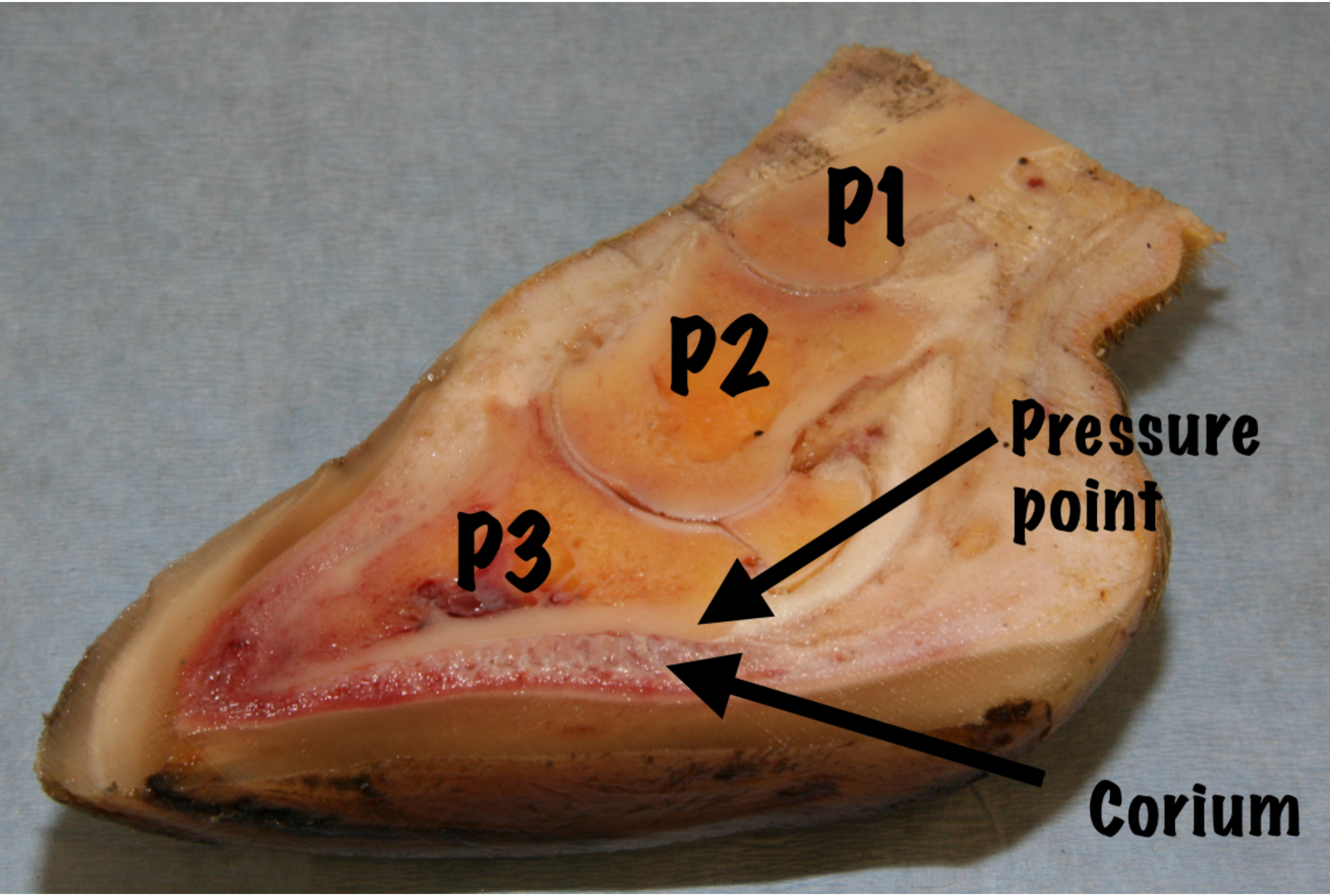
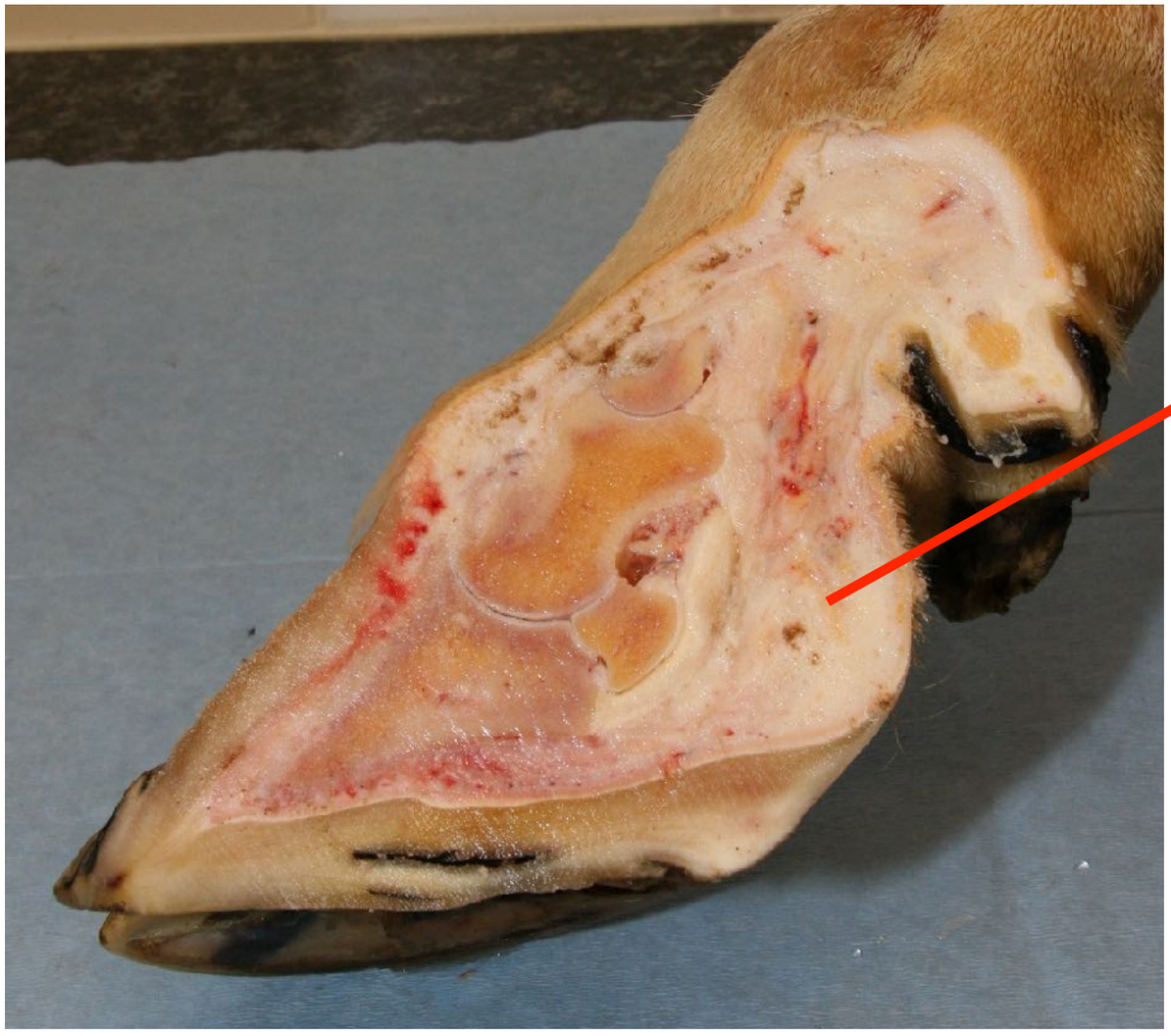
Claw horn lesions

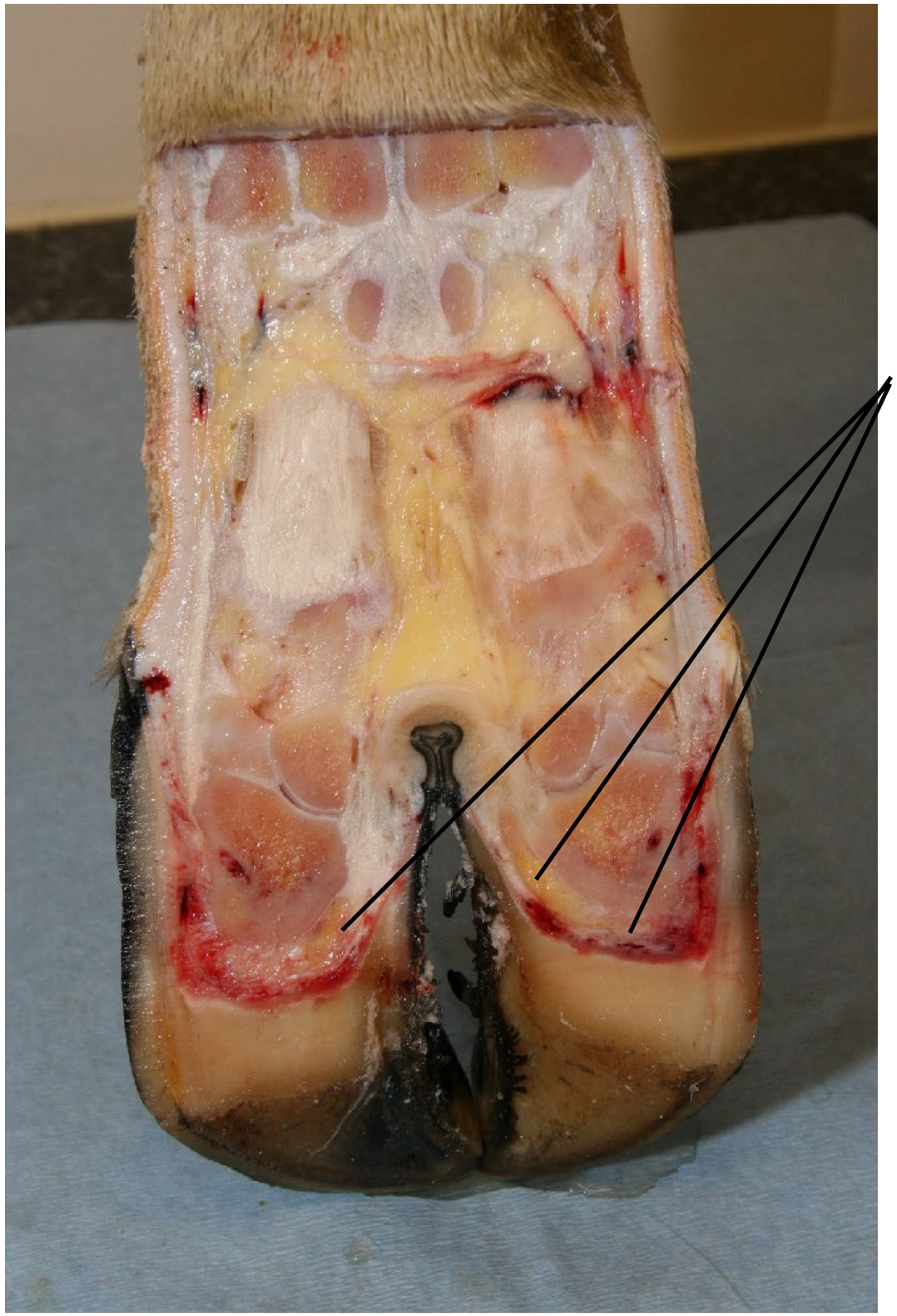
(Sole bruising; White line disease; Sole ulcers)

Sole haemorrhage (sometimes erroneously termed “laminitis”) in the typical site beneath the pressure point at the back of the pedal bone.


P1
P2
P3
Pressure point
Corium



fat pad, or
digital cushion,
under heel
bulb



Fat of the digital cushion extending forwards, under the pedal bone. There are three main pillows of fat in each digit, axial, abaxial and midline. The axial fat pad extends the most distally.

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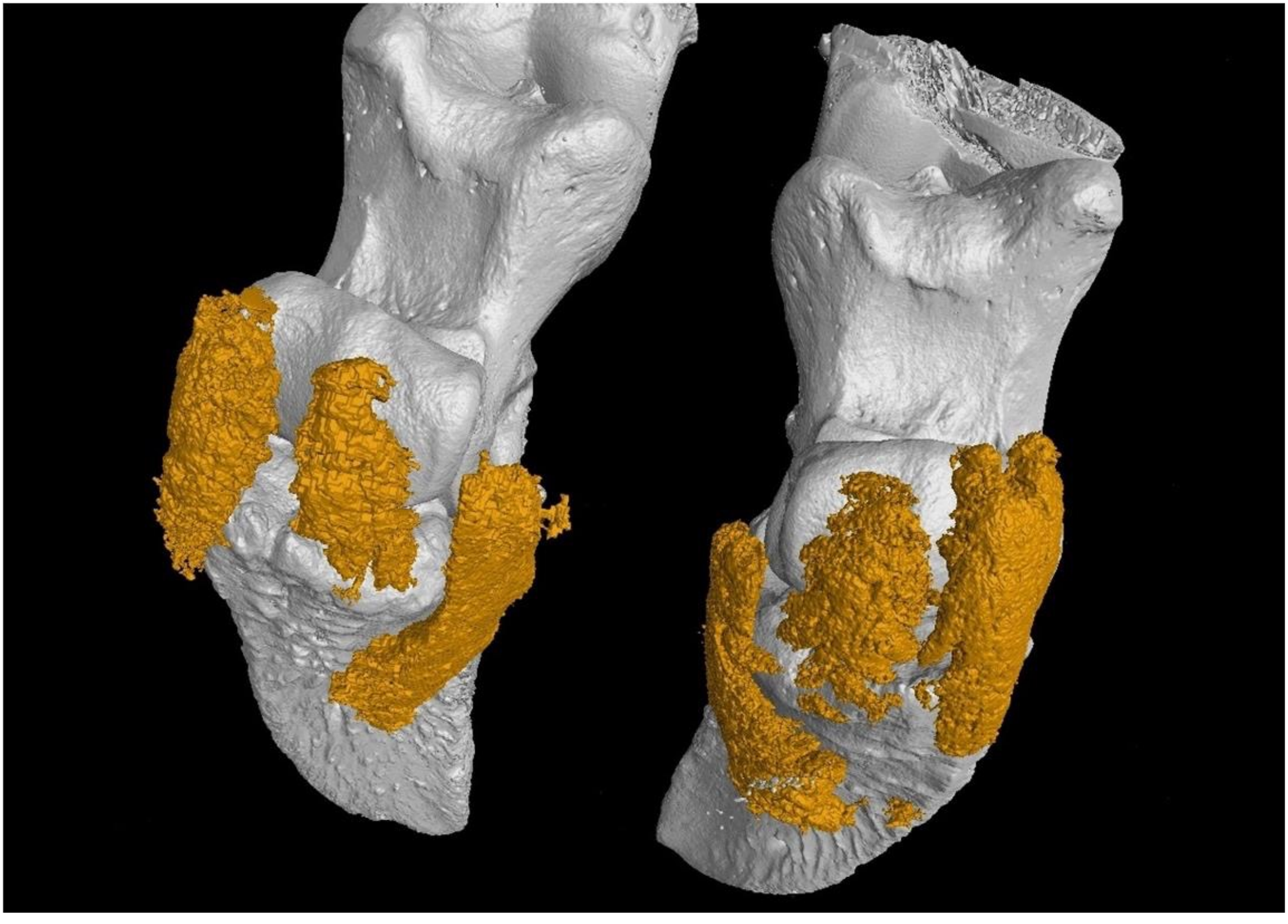
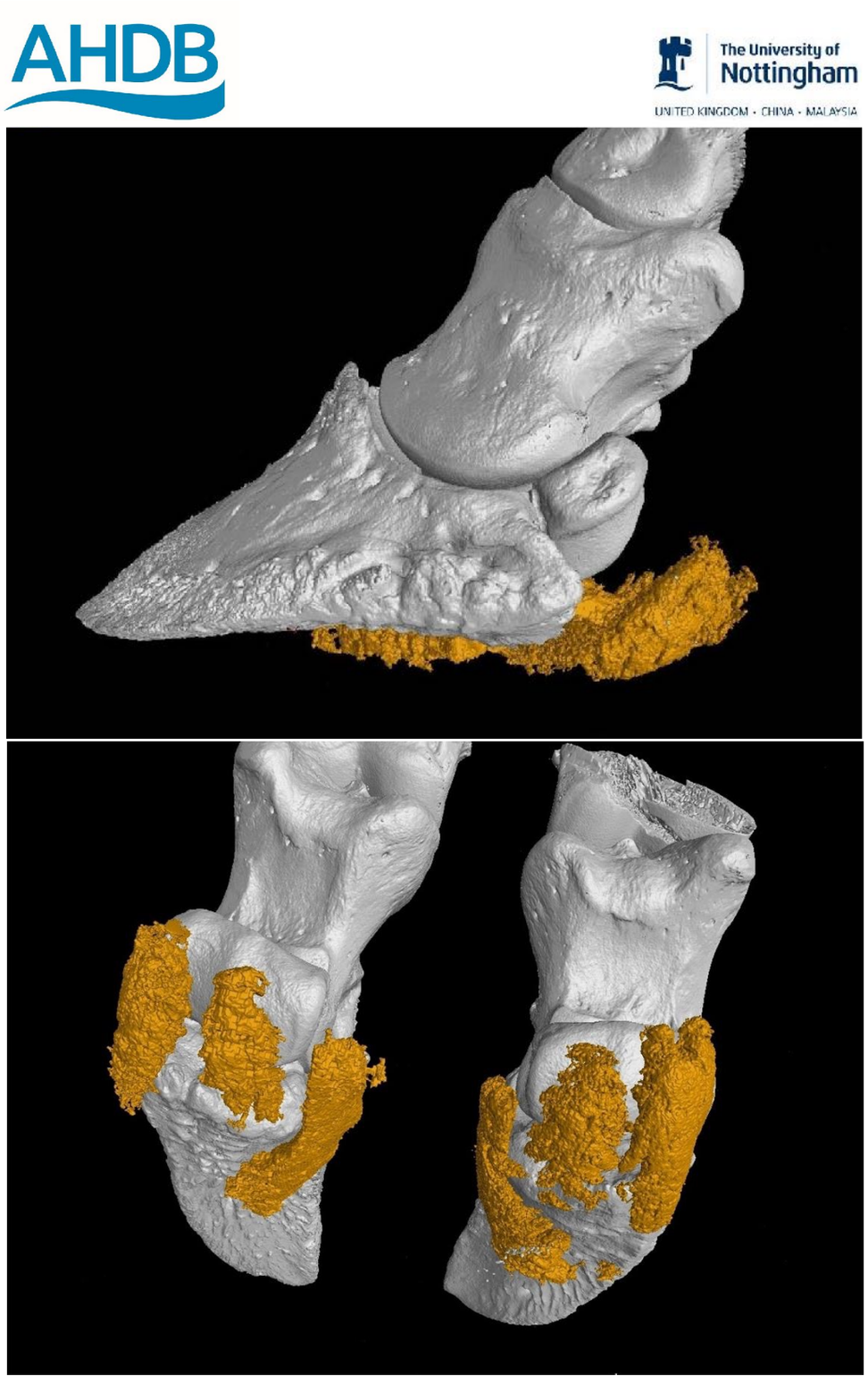


Questions about the digital cushion



- How does body condition loss lead to claw horn lesions?
- Is the fat pad thinner in thin cows?
- Does a thinner fat pad have less cushioning ?
- Does increased trauma lead to lesions?

Key findings:

- Cushion thickness relates to back fat
- More likely to develop SU/SH if
  - had thin cushion
  - low back fat thickness
  - lost back fat

Do lame cows go thin?
Or do thin cows go lame?

Key Message

To protect your cows from going lame:

- calve down cows and heifers between BCS 2.5-3.5
- avoid excessive weight loss in early lactation

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2: The increased risk of lameness during the period around calving

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Risk factors of heifer lameness

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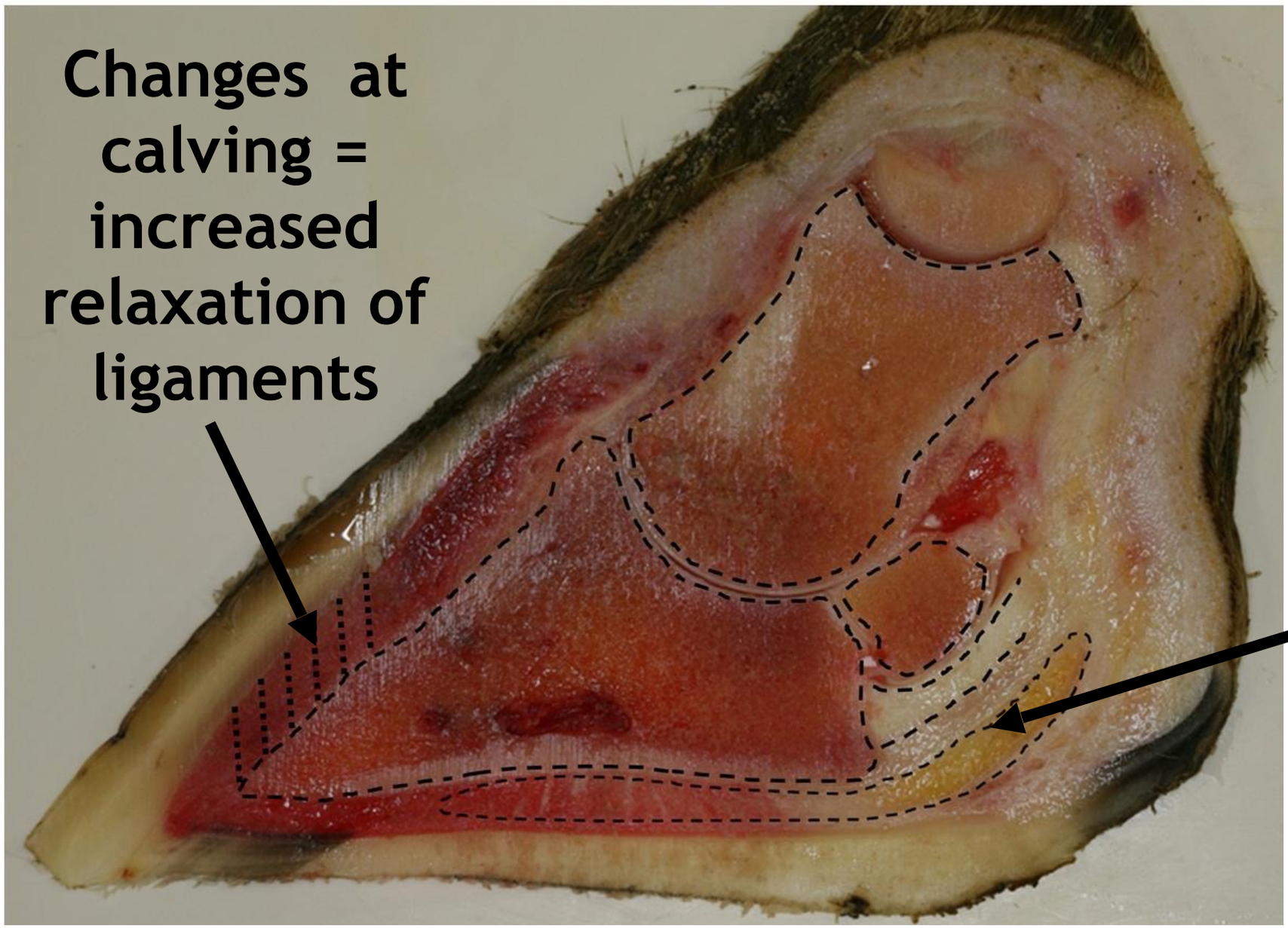
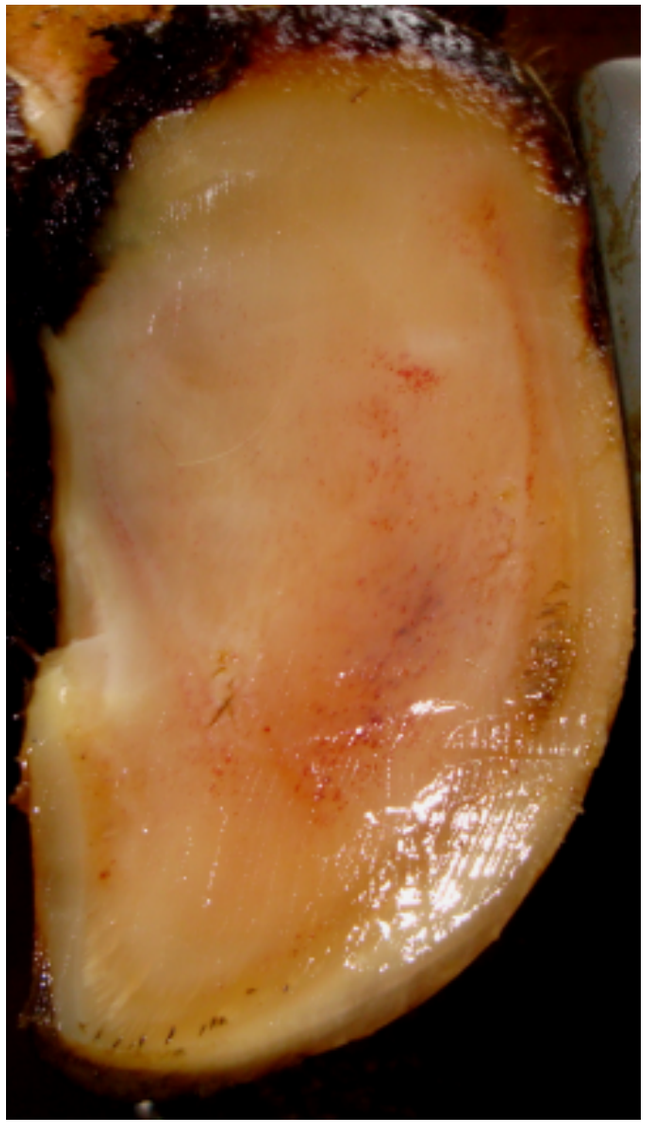


Key Message

Reducing the risk around calving:

- Check heifers 8-6 week before calving
- Ensure they have healthy hooves in good shape with no active digital dermatitis
- Introduce your heifer to the herd prior to calving
- Ensure heifers are in correct body condition at calving
- **Maximise lying times after calving: e.g. good cubicle comfort and prior cubicle training, or a straw yard**



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3: Inflammatory bone changes in the foot

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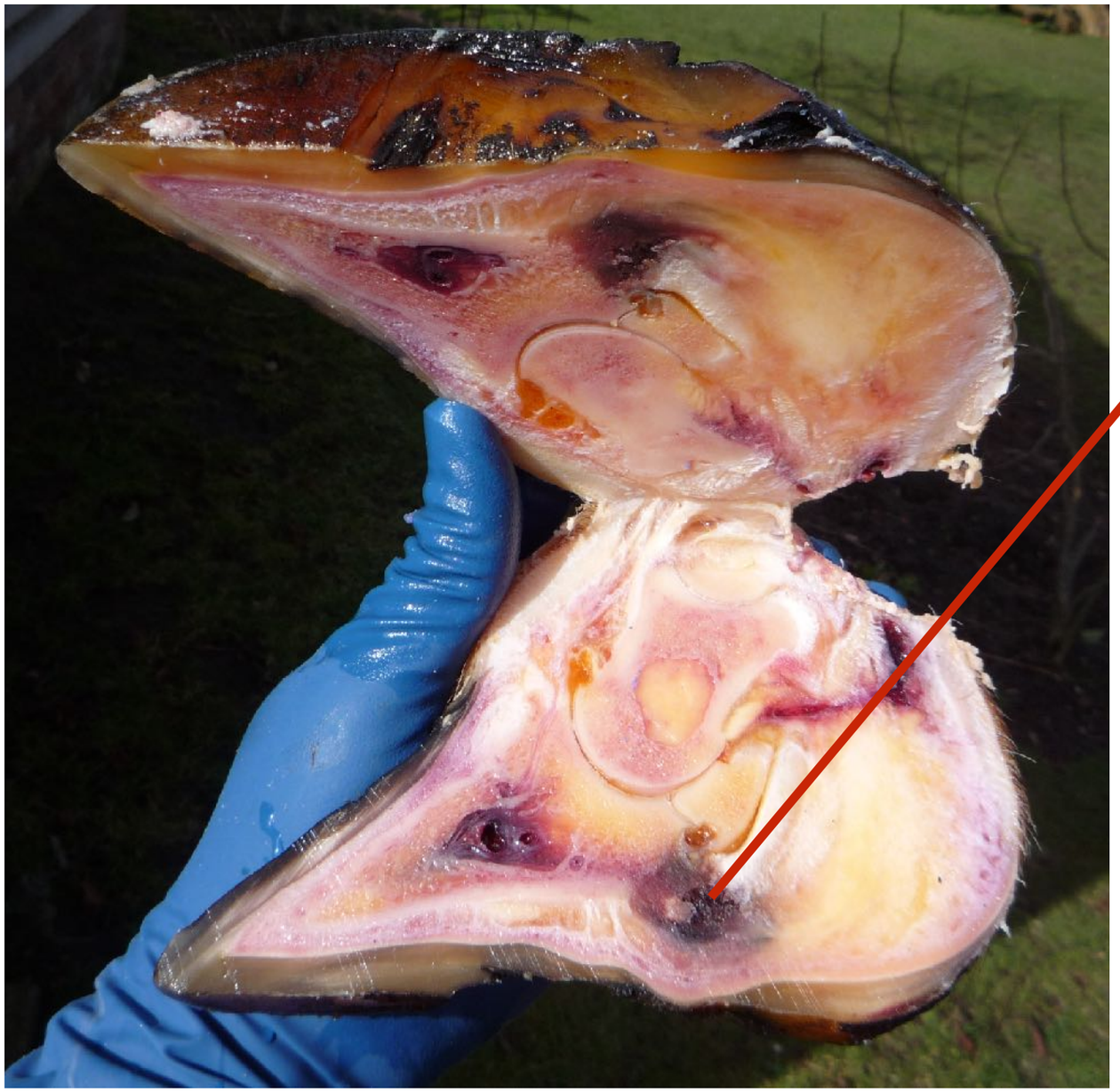

A bisected hoof with a sole ulcer, showing the damage extending from the corium beneath the protruding flexor tubercle of the pedal bone.

A 3-D image of the bottom surface of a normal pedal bone (P3)

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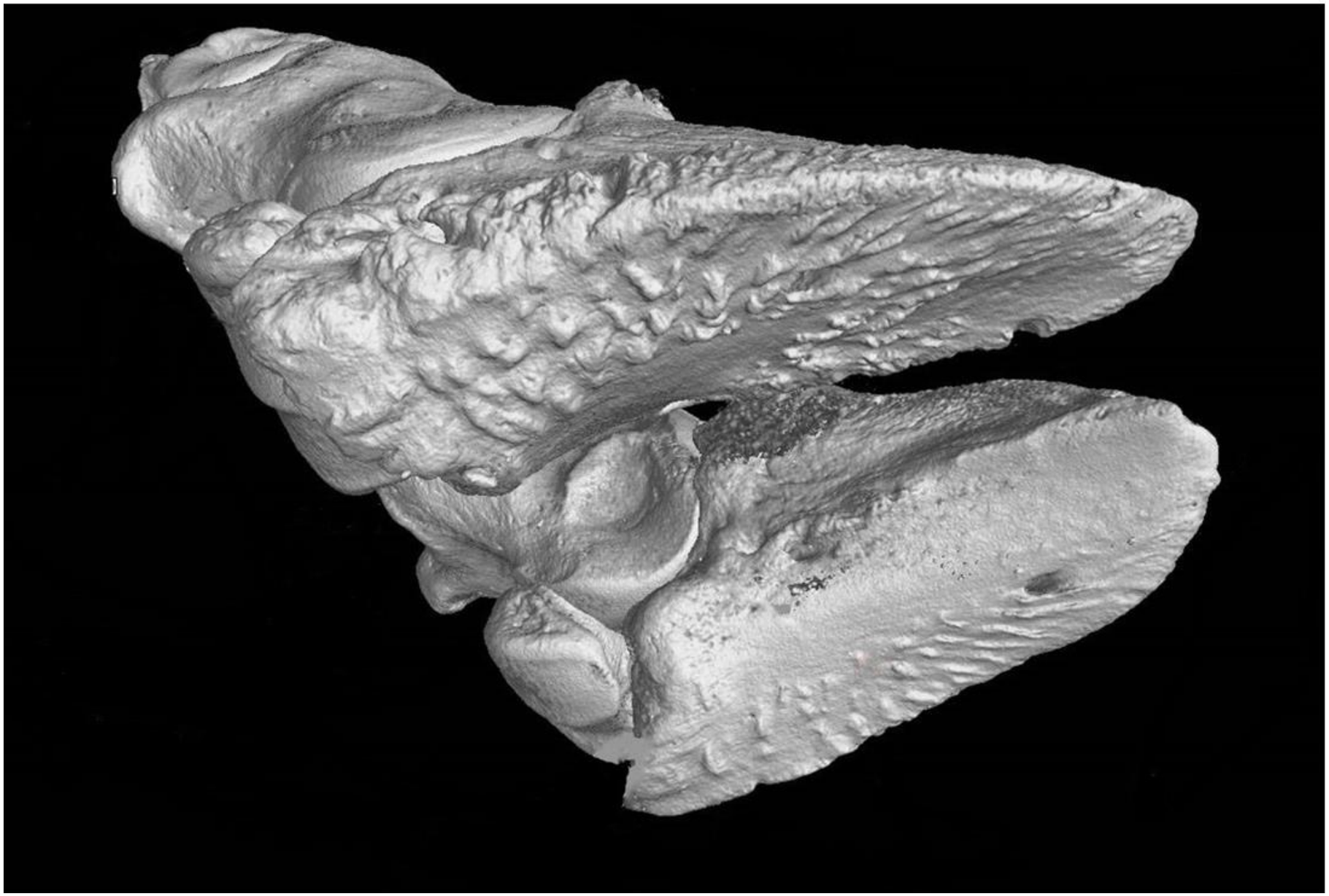
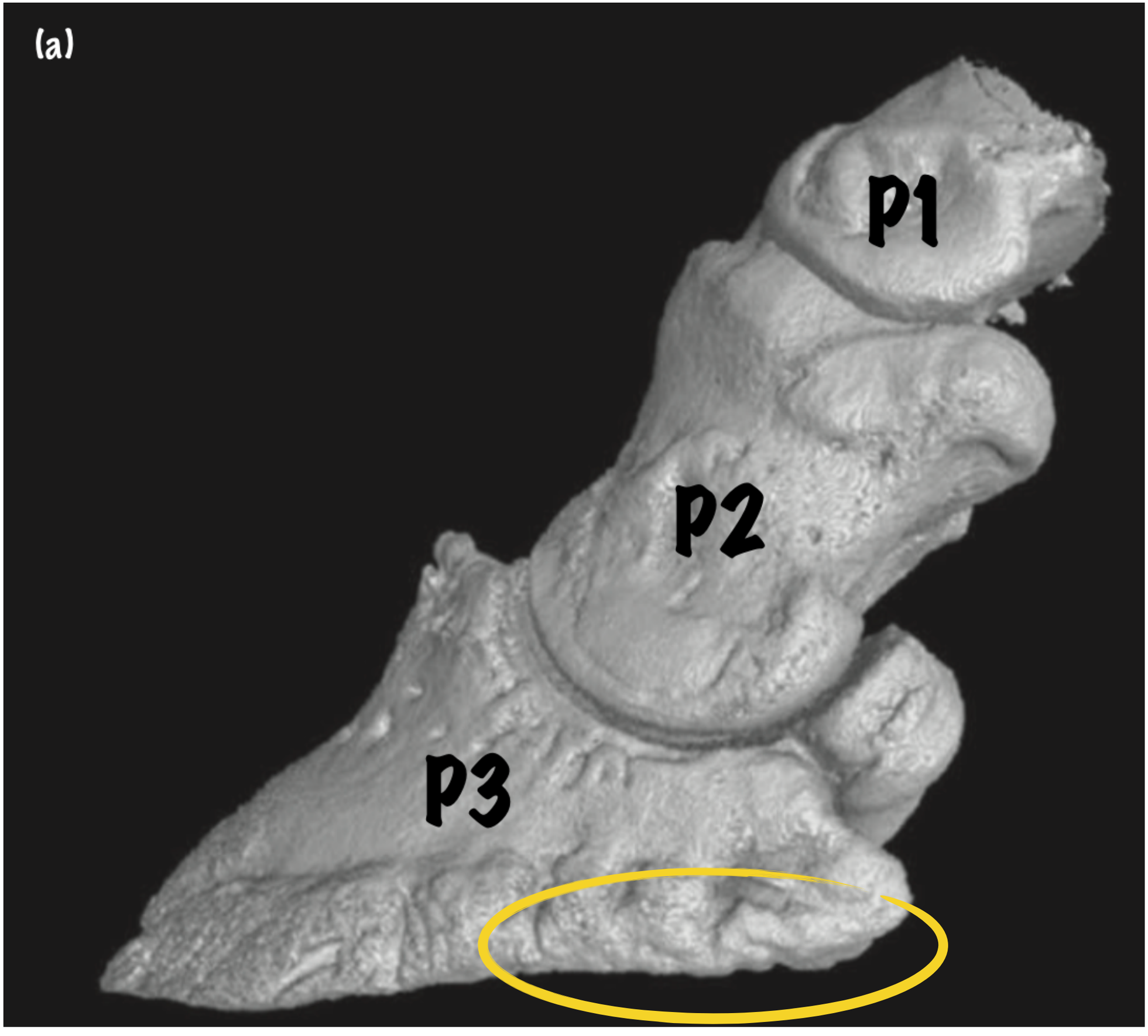
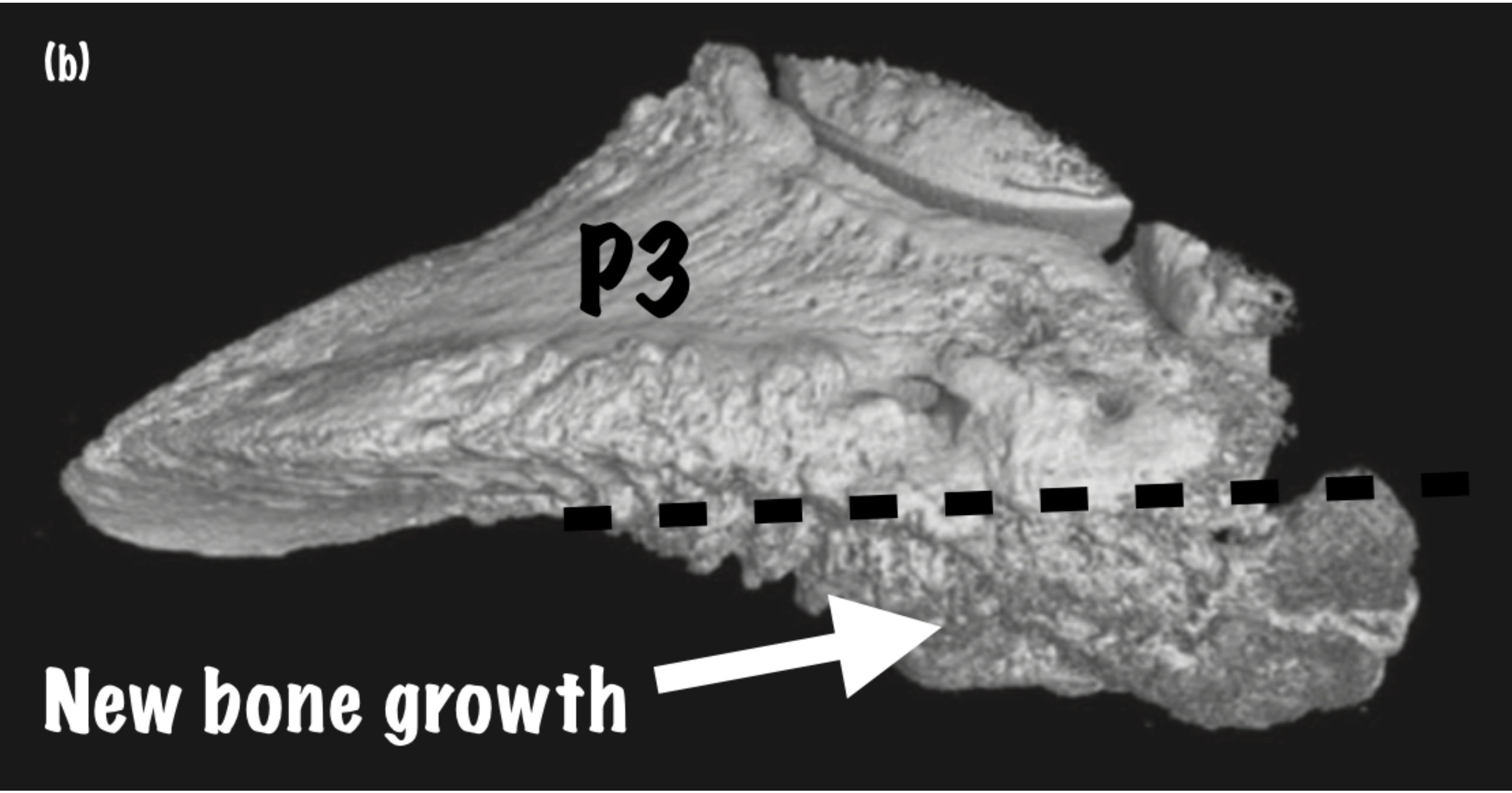



(a)
P1
P2
P3



Extra bone growth compared to life events

Key Message

Treat new lame cases early

- New bone formation is irreversible
- These cows are more likely to go lame again
- New bone due to inflammation

EDPET: **E**arly **D**etection, **P**rompt **E**ffective **T**reatment

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4: The importance of NSAIDs (Non-Steroidal Anti-Inflammatory Drugs)

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A randomised controlled trial to treat claw horn lesions:

Group 1: Trim only

Group 2: Trim plus block

Group 3: Trim plus NSAID

Group 4: Trim plus block plus NSAID

The treatment outcome of **new** lame case cows were also compared with cows which had lesions at the start of the trial

Findings:

1) For NEW lame cases,
after 35 days, treatment success (non-lame) was:

Group 1: Trim only	**69%**
Group 2: Trim plus block	**72%**
Group 3: Trim plus NSAID	**76%**
Group 4: Trim plus block plus NSAID	**85%**

Findings:

2) There was a FIVE TIMES better cure rate for NEW lame cases compared to cows with lesions at the start of the trial

	Cure rate after 35 days:
NEW lame cases, treated within 2 weeks:	**69-85%**
OLD lame cases, treated with a gap of 2 weeks or more from first becoming lame:	**15%**

Key Message

EDPET: **E**arly **D**etection, **P**rompt **E**ffective **T**reatment

- Take the weight off - a trim
- Take more weight off - a block
- Reduce inflammation - non-steroidal anti-inflammatory

1

+

2

+

3

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5: Trimming: what is the correct toe length?

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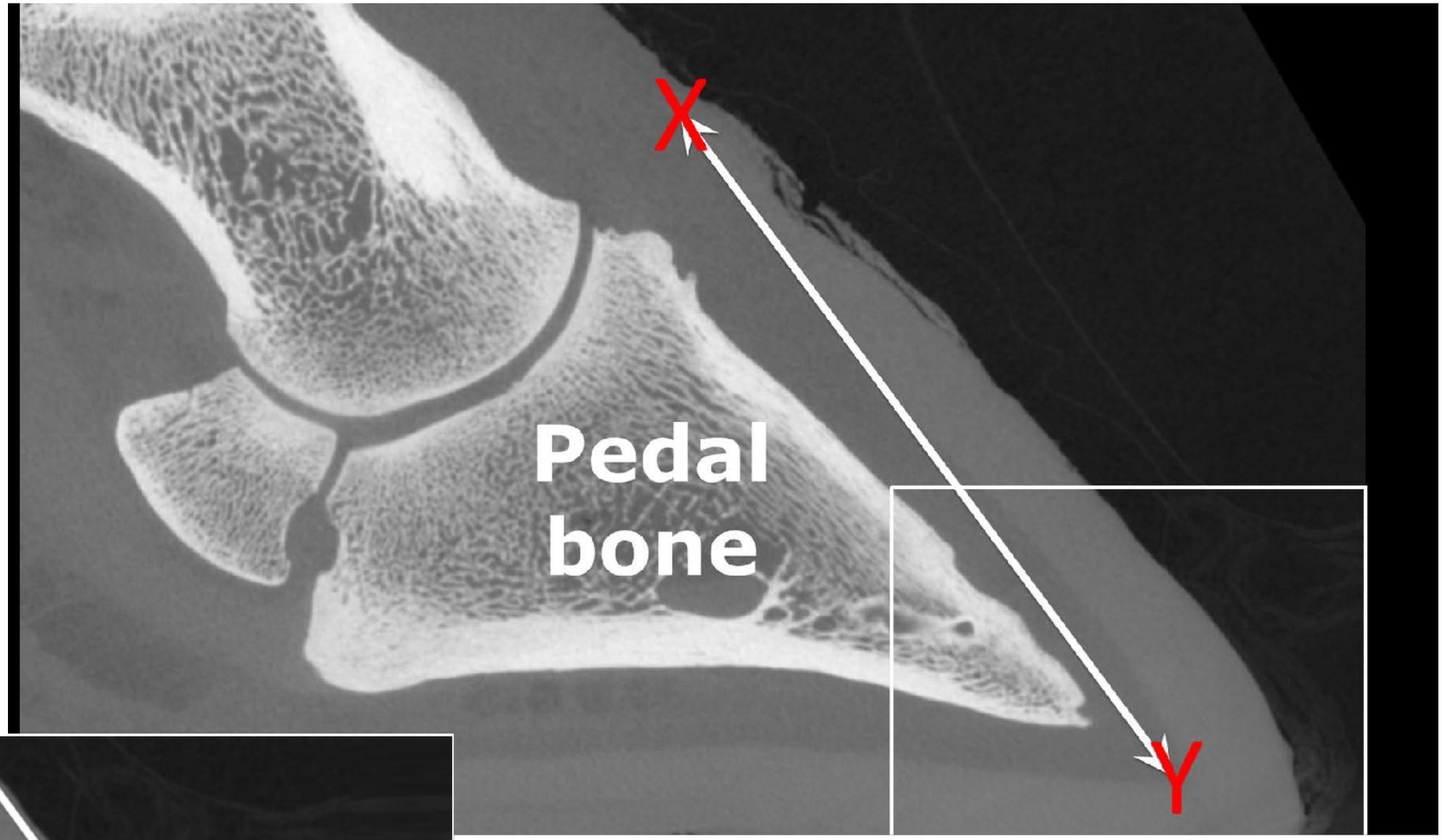
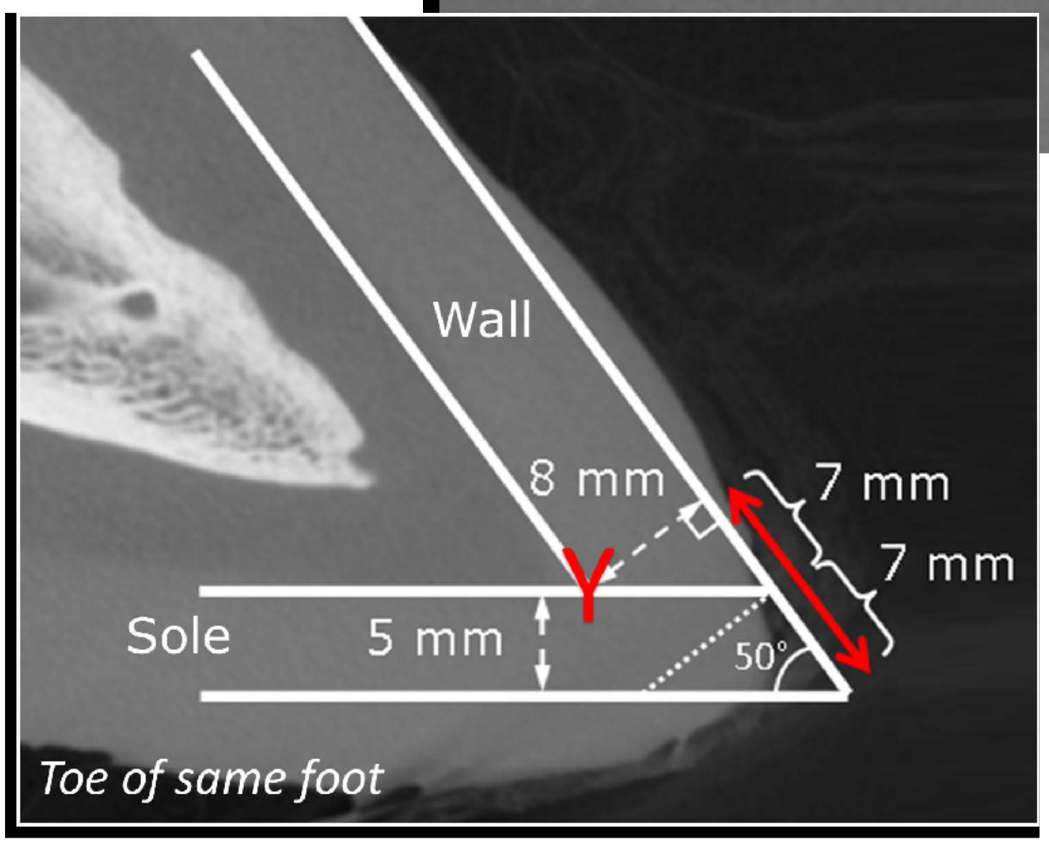
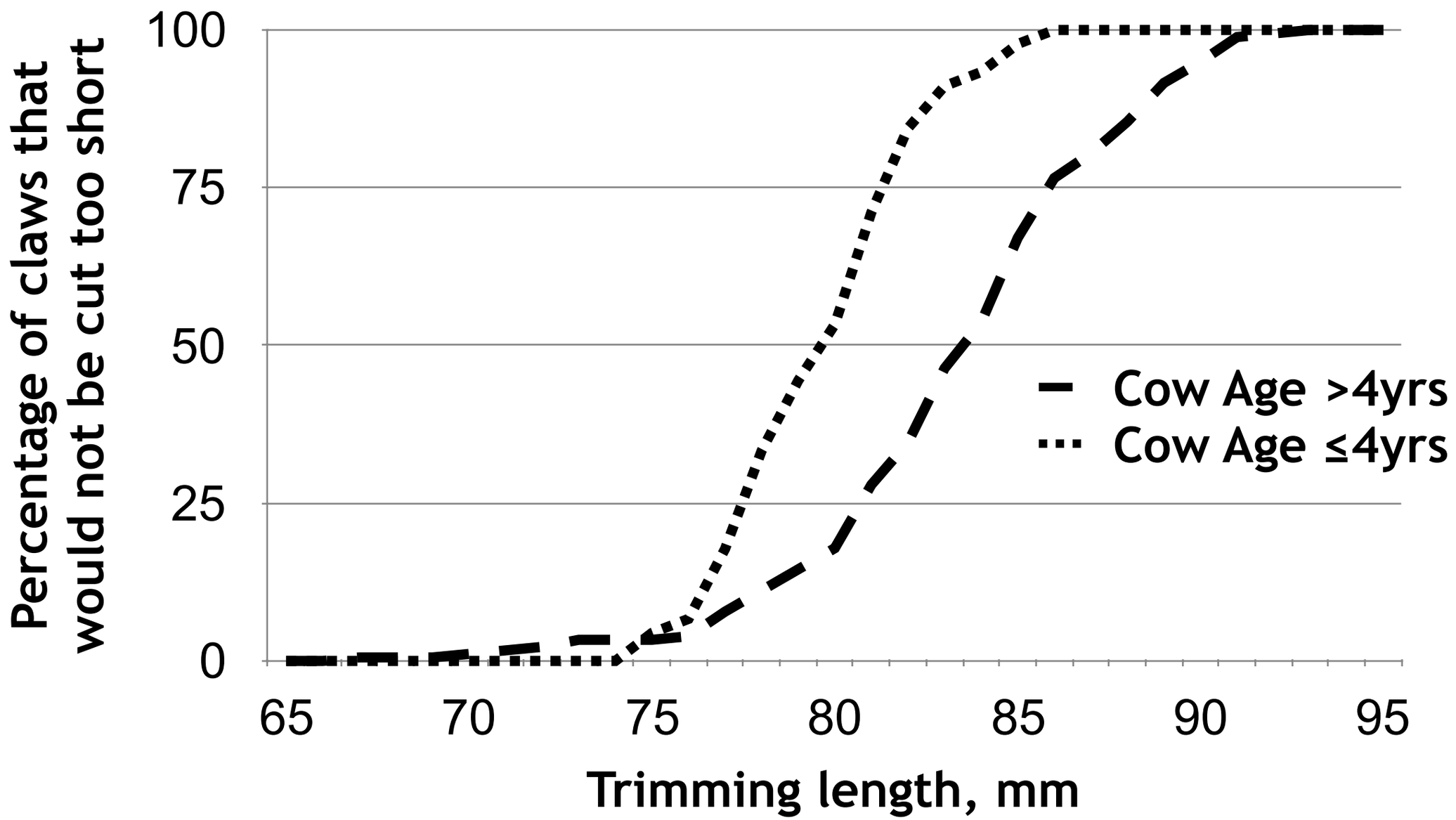




The minimum safe trimming length was calculated for each claw (abattoir specimens)

Findings:



75mm trim + 5mm step was too short for 55% of claws

Key Message

- One size does not fit all
- Trimming to 75mm plus 5mm step is not safe for all cows
- Trimming to 90mm is safe for 96% of claws studied (or 85mm plus 5mm step)

BUT: it depends where you measure from! This study measured from the very top of the coronary band, not from where the wall horn (hard horn) begins. This is approximately 5mm above where many people normally measure toe length from.

6: An update on digital dermatitis

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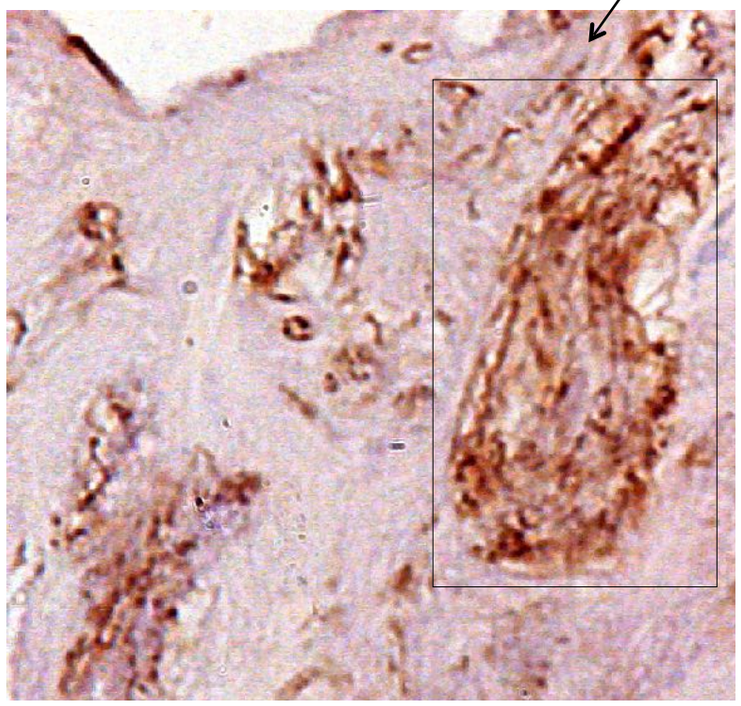
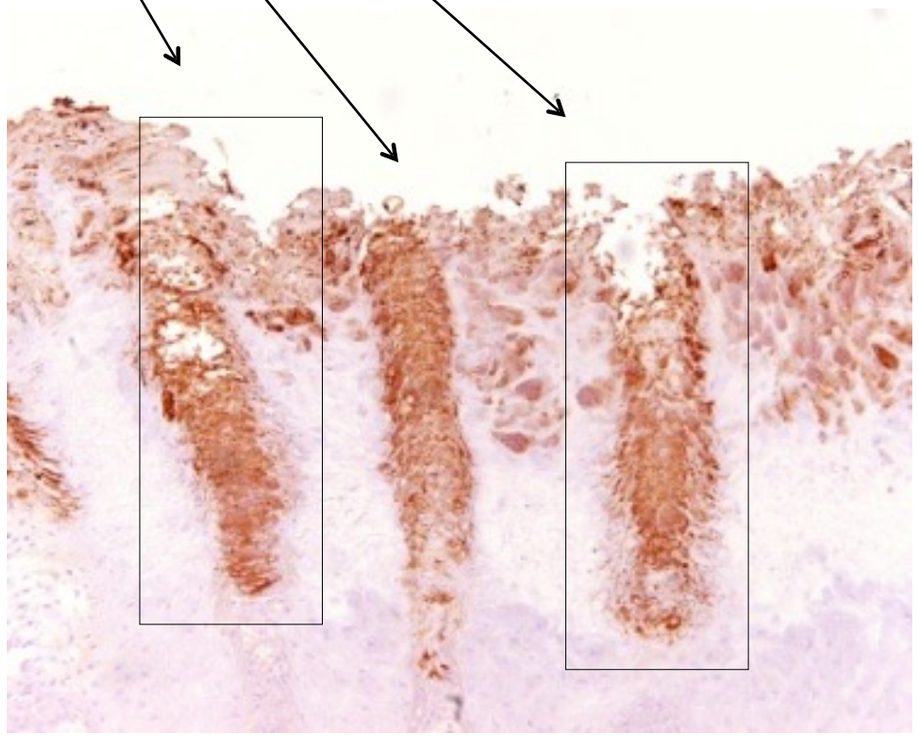
Digital dermatitis (DD)

- Main bacteria responsible = *Treponema*.
- Causes skin infection by entering into the hair follicle

Hair follicle





Brown staining inside the hair follicle are treponeme bugs. The bacteria therefore clearly live relatively deeply within the skin layers

A study of DD risks.

- Highest incidence in winter months
- Antibiotics have only a temporary effect
- No single effective treatment
- Treated cattle often soon develop disease again
- Cattle can “carry” disease onto new farms
- Cleaner farms have fewer outbreaks

Infected cows appear to be the main reservoir of infection in a herd. Slurry seems important as it damages the skin allowing infection to take hold, and to spread from cow to cow.

A study of in-calf heifers.

Findings:

Those with digital dermatitis lesions were:

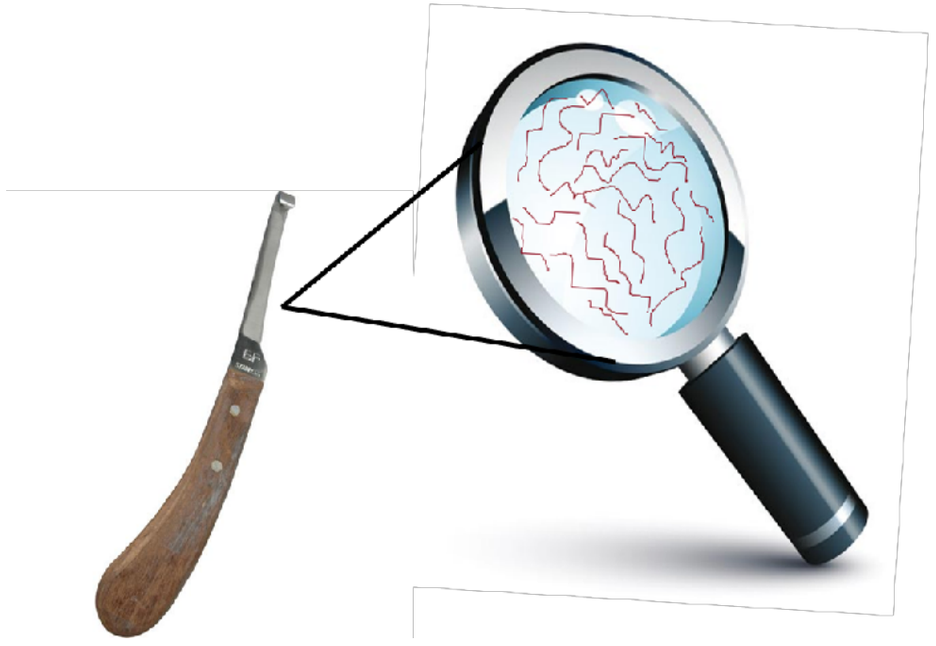
- 55% less likely to conceive at first service
- remain open for an average 25 extra days
- produce 334 kg less milk in first lactation (305 d)
- 5 x more likely to have DD in first lactation

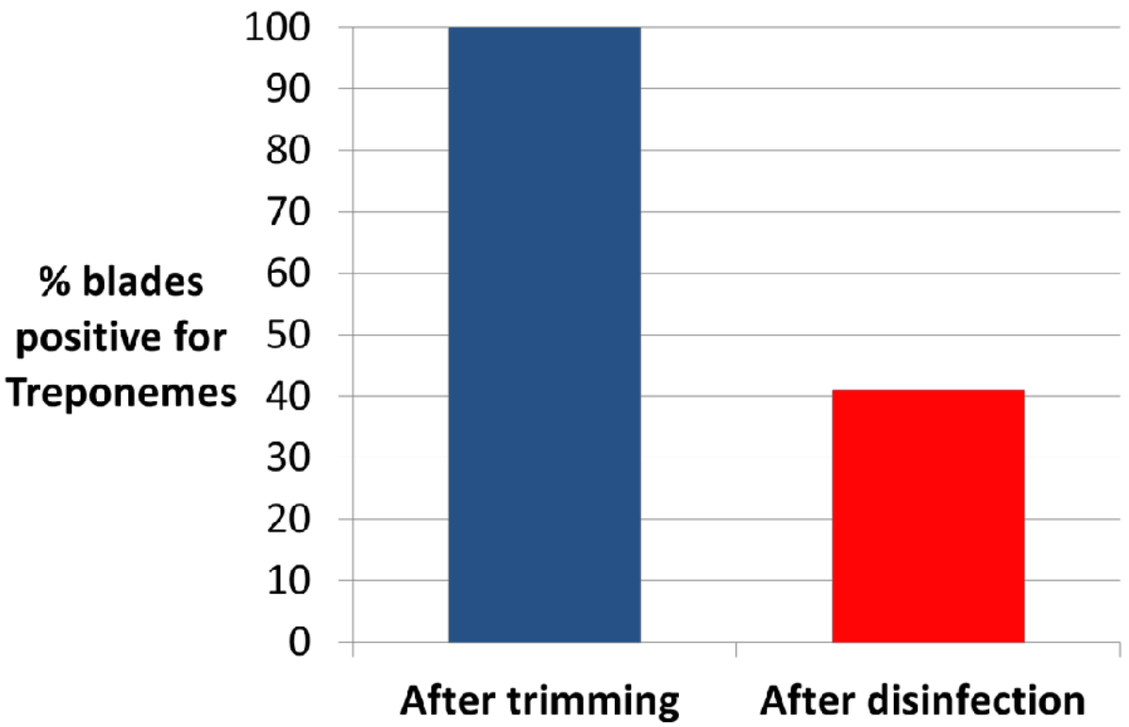
A study of where DD can survive.

- To test how well DD Treponemes survive in various conditions
  - Slurry, faeces, bedding, hoof knives etc.
- To test if Treponemes live on healthy hoof tissue without causing disease

Findings:

- Treponemes can survive for short periods (hours) on hoof trimming equipment, including knives, gloves and disc cutters
- Disinfection reduces infection levels significantly
- Treponemes do not appear to be sustained in the environment for long periods
- Cows with the disease (lesions) are the main reservoir of infection
- Equipment and slurry are both potential methods of spreading bacteria between cows
- It takes more than just the presence of bacteria to cause DD lesions. Damage to the skin (such as from wetting) is also required.

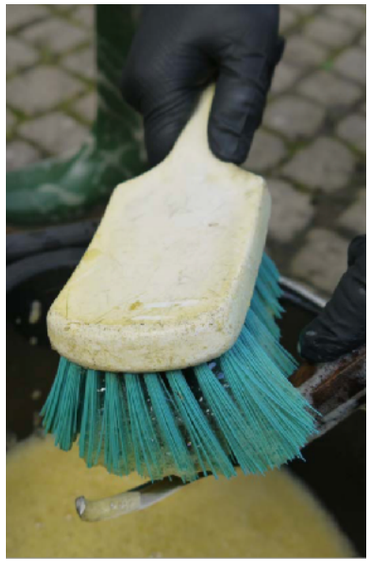




Key Message

Take the THREE PRONGED approach to DD control:

1. Keep it out - don't bring in new strains on purchased cattle; avoid sharing equipment between farms; disinfect
2. Don't let it spread - treat cases promptly and thoroughly; don't harbour carrier cows
3. Build resilience (healthy skin) - keep feet dry and clean; build resilience through genetics; reduce stress in the herd to safeguard natural immunity



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Join the Healthy Feet Programme to learn more about reducing lameness in your herd

You can find a Mobility Mentor near you by checking the map on the AHDB Dairy website

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