

10. Is local anaesthesia the future?

Hanne Maribo

26th October 2021

Congress, Herning

STØTTET AF
Svineafgiftsfonden



10. Is local anaesthesia the future?

🐷 Boar taint

🐷 Local anaesthesia

🐷 Effect

🐷 Routines

🐷 Working environment

🐷 Practical information

🐷 Other countries?

🐷 Total anaesthesia

🐷 "Economy"

🐷 Alternatives to castration

🐷 Male pig production

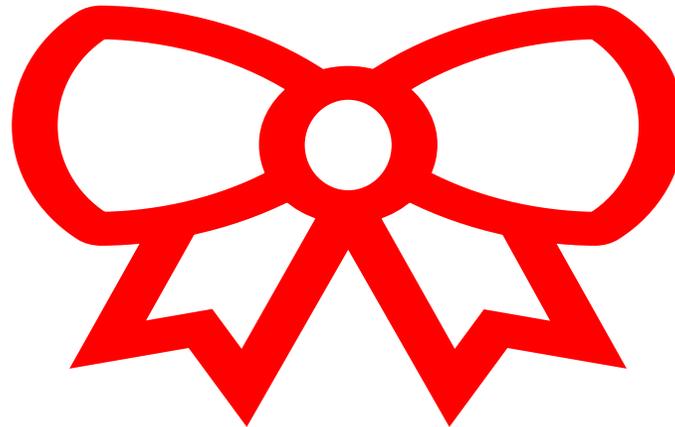
🐷 Selecting Duroc fathers

🐷 Immunocastration

🐷 Productivity

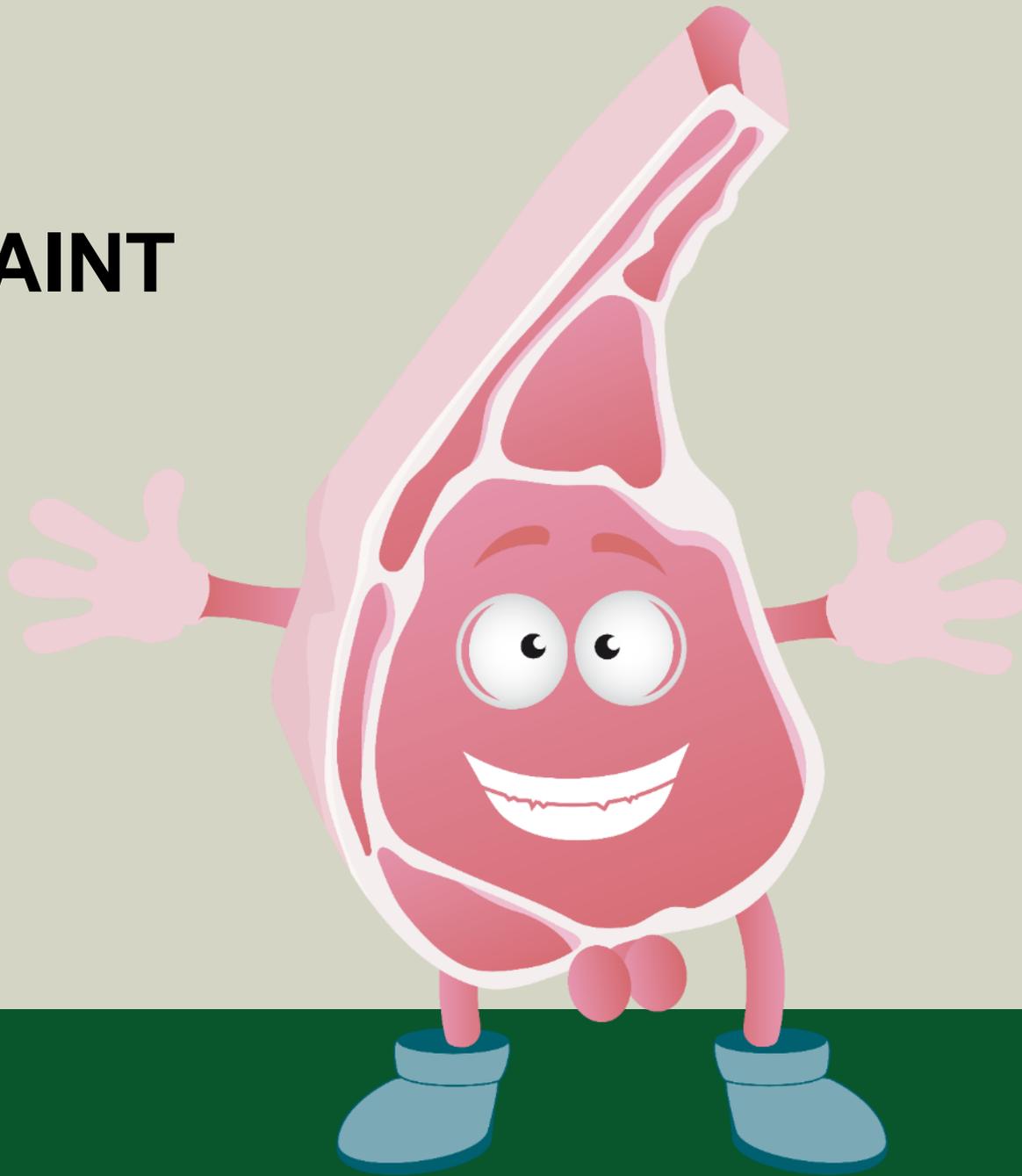
🐷 Behaviour

🐷 Economy



Why castrate male pigs?

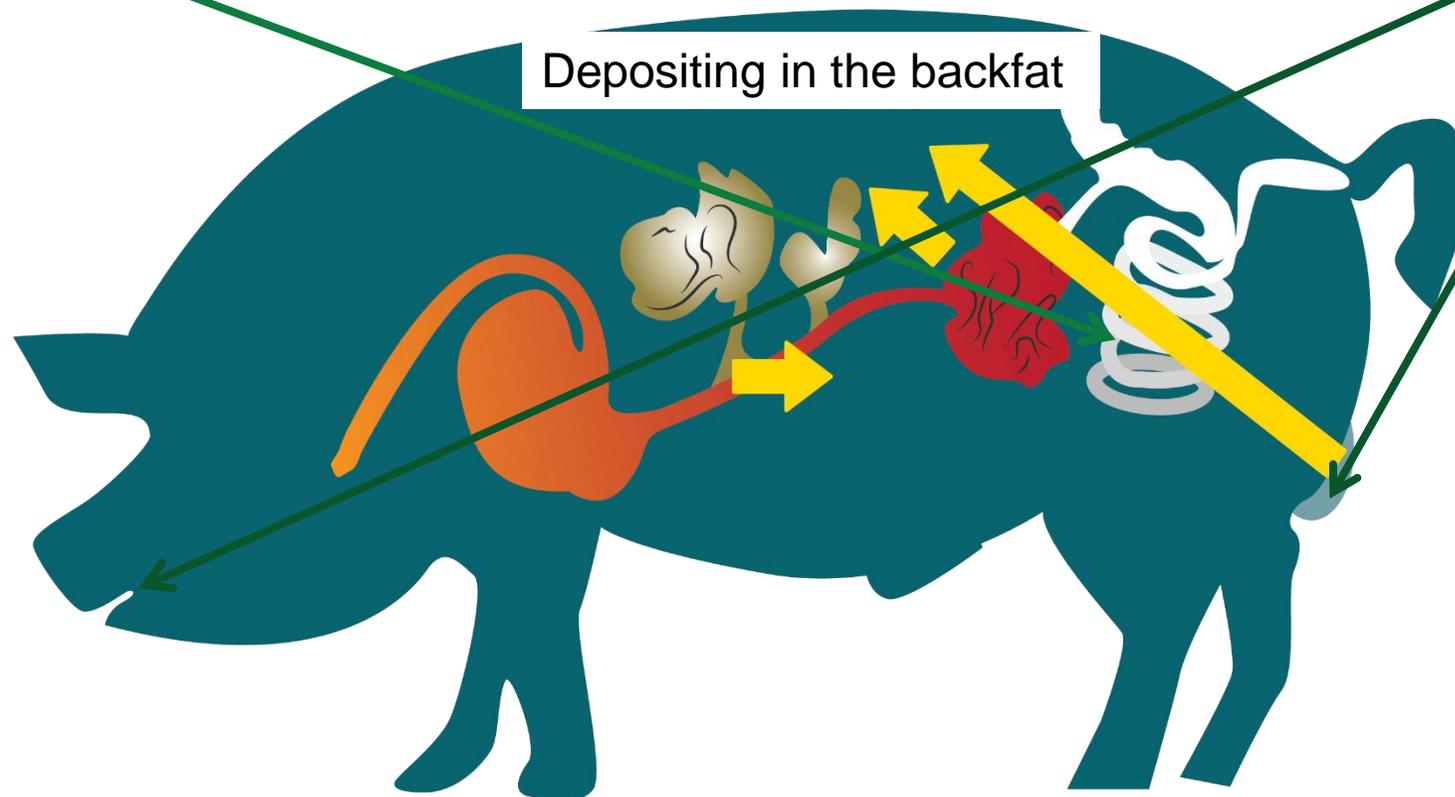
BOAR TAIN



Boar taint is caused by two compounds

Skatole

Androstenone



Can Danes smell boar taint?

Androstenone

Very sensitive
9%

Sensitive
21%

Not sensitive
70%

Skatole

Sensitive
6%

Not sensitive
94%

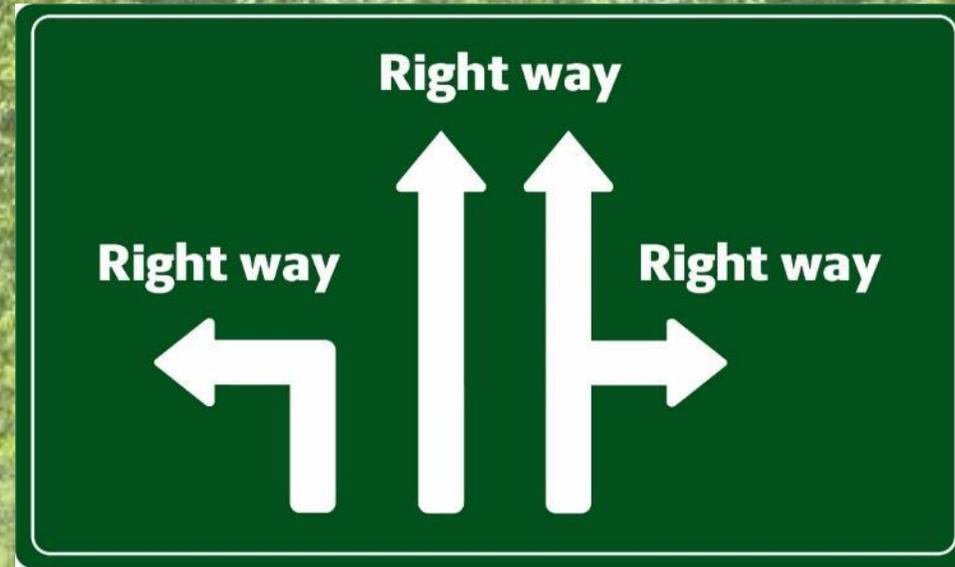
Are you sensitive?

Castration

Local anaesthesia

Total anaesthesia

Male pig production



Immunocastration

Semen sorting

Castration

Local anaesthesia

Total anaesthesia



Vi er blandt de bedste i verden til grisevelfærd, og i år bliver vi endnu bedre.

Massiv forskning og viljen til at udvikle sig. Det er baggrunden for danske griseproducenters ledende position på verdensplan, når det gælder kvalitet og dyrevelfærd. Vi vil hvert år gøre det bedre end året før, og 2018 bliver ingen undtagelse.

Kun kastration med bedøvelse

Når han gris ikke kaster res, øges risikoen for såkaldt "ornelugt" i kødet. Flere markeder i verden stiller derfor krav om, at grisene kastreres. I 2018 indfører danske landmænd på eget initiativ – som nogle af de første i verden – lokalbedøvelse før kastration.

Flere løsgående søer

Alle søer går løse i drægtighedsstalden, og alle nyfødte søer

indrettes i dag med løsdrift. Danske griseproducenter er verdensførende med at bygge farestalde til løse søer på eget initiativ. Når søerne går frit i farestalden, stiger dødeligheden blandt pattgrisene – blandt andet fordi søerne lægger sig på dem.

Vi investerer derfor i forskning og forsøg med farestalde til løse søer, der tager hensyn til både søernes velfærd og pattgrisenes overlevelse.

Massiv investering i forskning

Vi ønsker hele tiden at blive endnu bedre. I 2018 investerer de danske griseproducenter over 230 millioner kroner i forskning i kvalitet, dyrevelfærd og bæredygtighed. Forskningen udføres af landbrugets videnscenter, SEGES, i tæt samarbejde med Aarhus Universitet, Københavns Universitet og en række internationale universiteter og organisationer.

Disse tiltag er få eksempler blandt mange.

Læs mere om det, vi gør for grisenes velfærd, på lf.dk/grisevelfaerd

Noget at leve af. Noget at leve for.



Pig industry move



2019

The law says:

From 1 January 2018, farmers **are allowed** to use local anaesthesia for piglets before castration **AFTER** having completed a course (Bekendtgørelse 1324 af 29. november 2017 §7, stk 2)

Pig industry says:

From 1 January 2019, all piglets **must** be given local anaesthesia before castration

Have you joined the local anaesthesia course?

Course – is held by the veterinarian



2019

KURSUSBEVIS 

Har fuldført kursus i

**LOKALBEDØVELSE I FORBINDELSE
MED KASTRATION**

Kurset indeholde:

- Lovgivning om kastration og lokalbedøvelse
- Anatomi og fysiologi
- Udstyr og præparater i forbindelse med lokalbedøvelse
- Metode og teknik – lokalbedøvelse
- Metode og teknik – kastration
- Sikkerhed og hygiejne

Kursusdato for teori: / 20 Kursusdato for praktisk: / 20

Kursusdyrlæge (Teori): Kursusdyrlæge (Praktisk):

Dyrlæge xx.xxxx.xxx Dyrlæge xx.xxxx.xxx
Underskrift og dato Underskrift og dato

 2 hours theory

 Mostly pictures and videos

 No preparation or homework

 Practical training by the vet

 Local anaesthesia minimum 10 pigs

 Lifelong certificate

Controlling the use of local anaesthesia



DANISH & FVST control in the herd

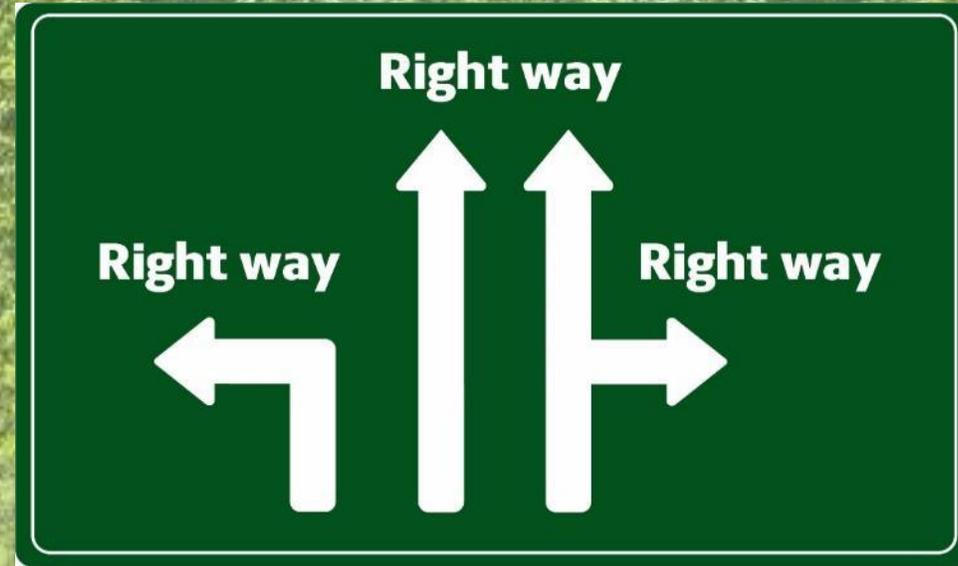
- 🐷 Buying anaesthetics
- 🐷 Looking at the equipment
- 🐷 Questions about routines etc.
- 🐷 Course certificates

Castration

Local anaesthesia

Total anaesthesia

Male pig production



Immunocastration

Semen sorting



LOCAL ANAESTHESIA



ANALGESIA



A pig is shown in a metal muzzle, held by a person in a white lab coat. The pig's mouth is open, and a speech bubble with the word "YES!" is positioned near its mouth. The background is a blurred indoor setting, likely a laboratory or veterinary clinic.

YES!

**Does local
anaesthesia work?**

Local anaesthesia

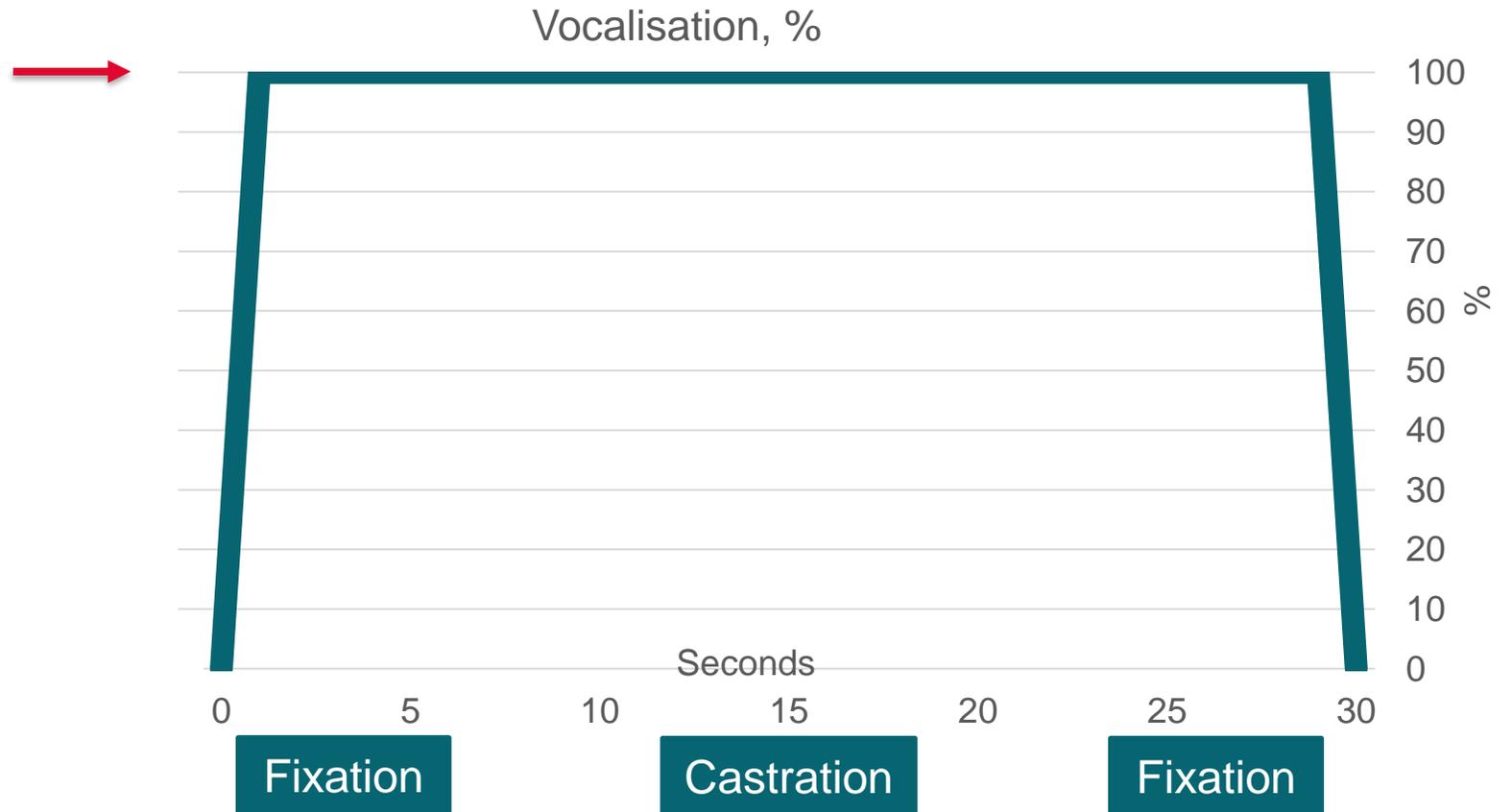


Castration

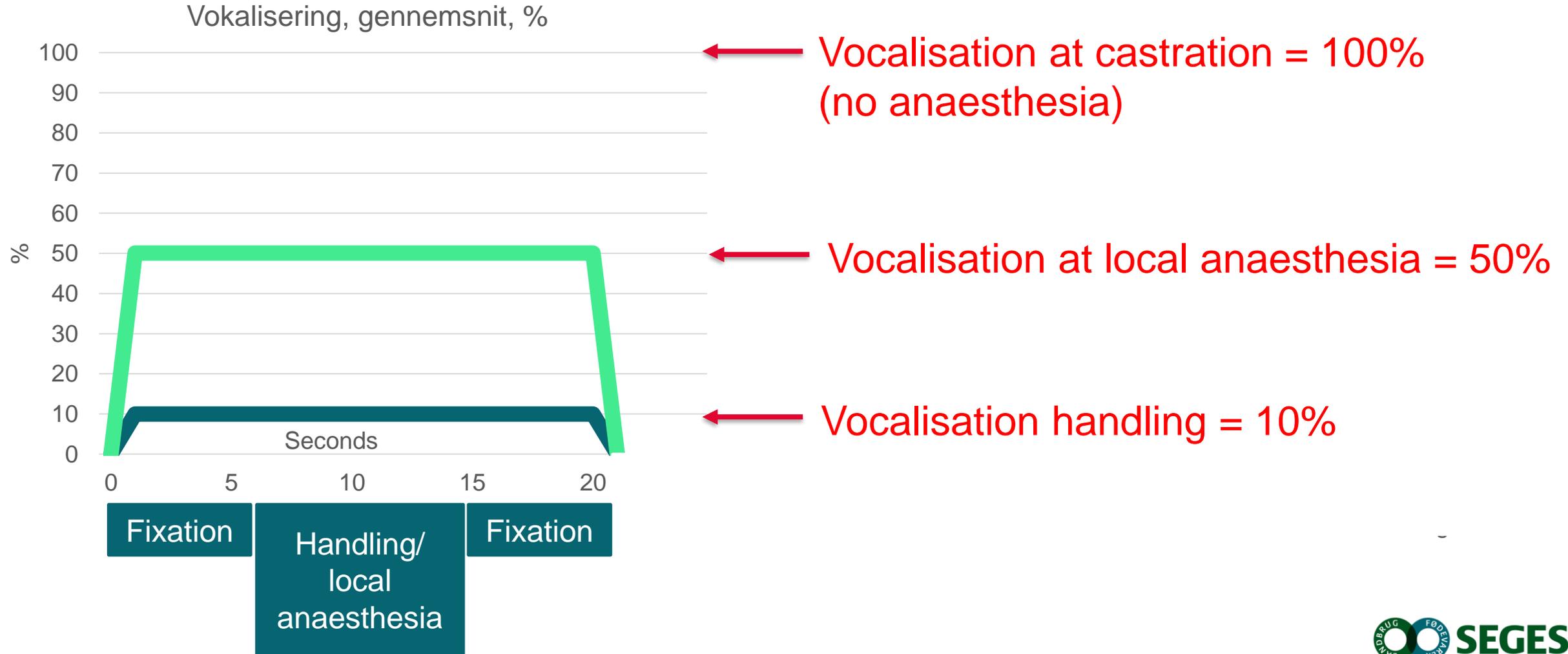


% change in vocalisation local anaesthesia

Vocalization at castration
no anaesthesia = 100%



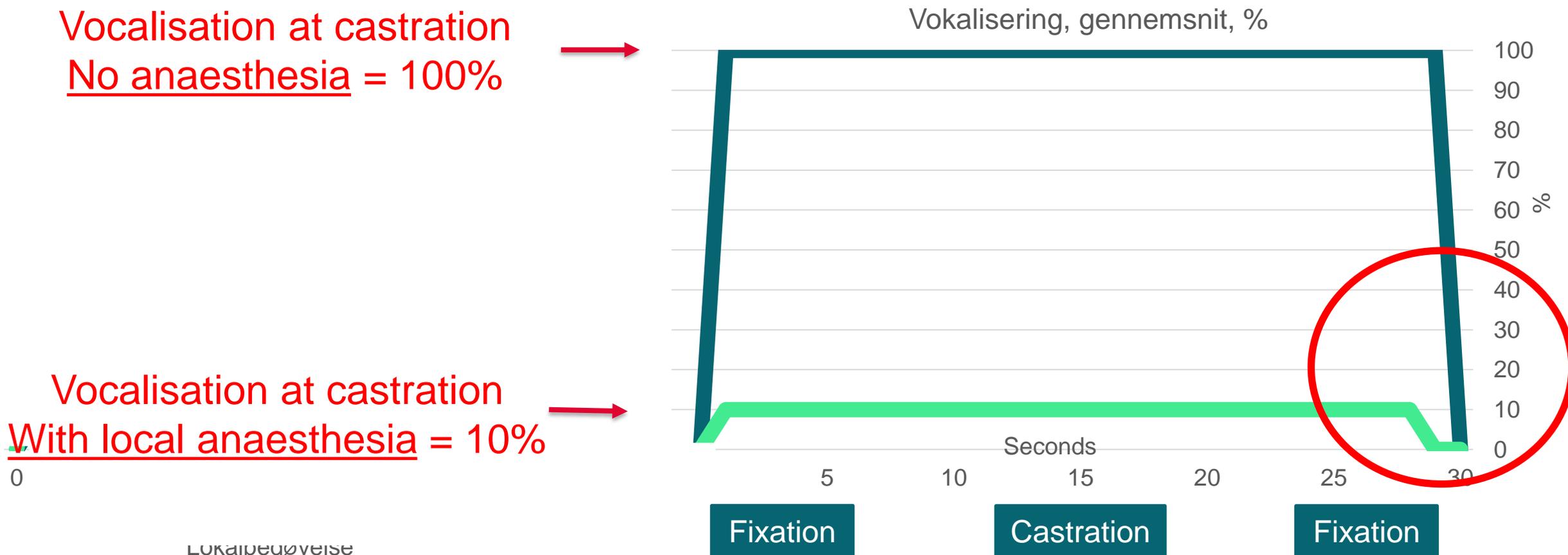
% change in vocalisation local anaesthesia



% change in vocalisation local anaesthesia

Vocalisation at castration
No anaesthesia = 100%

Vocalisation at castration
With local anaesthesia = 10%



LOKALANÆSTHESI



Practical tips using local anaesthesia

Inspiration for work routines using local anaesthesia

- One litter at the time



- More litters
- Castration after other routines
- Local anaesthesia before other routines



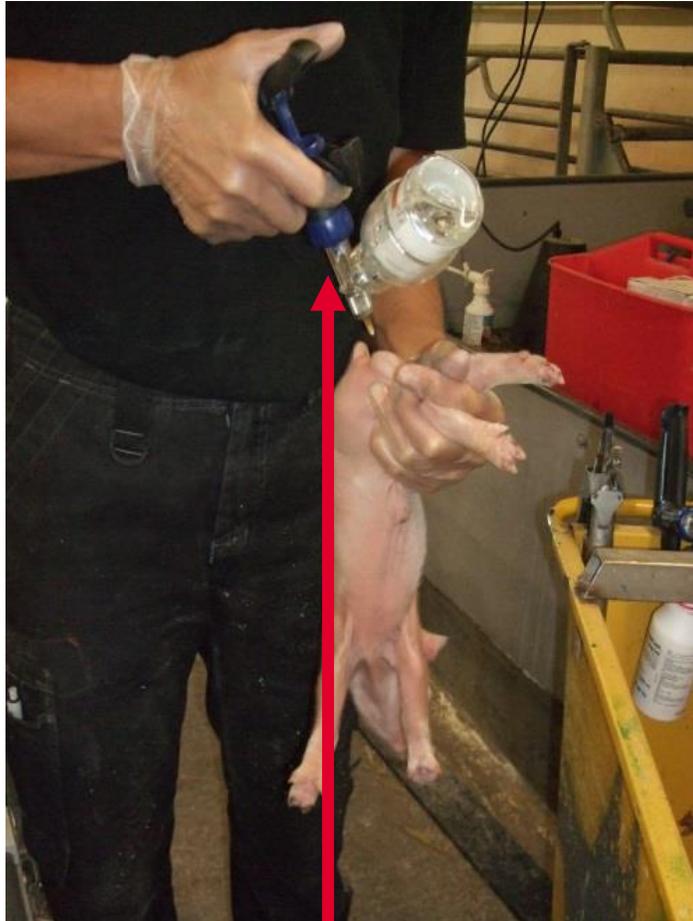
Videos here www.svineproduktion.dk

Example – storage of piglets waiting for the local anaesthesia to work



Fixation

New castration bench



Handheld



Castration bar



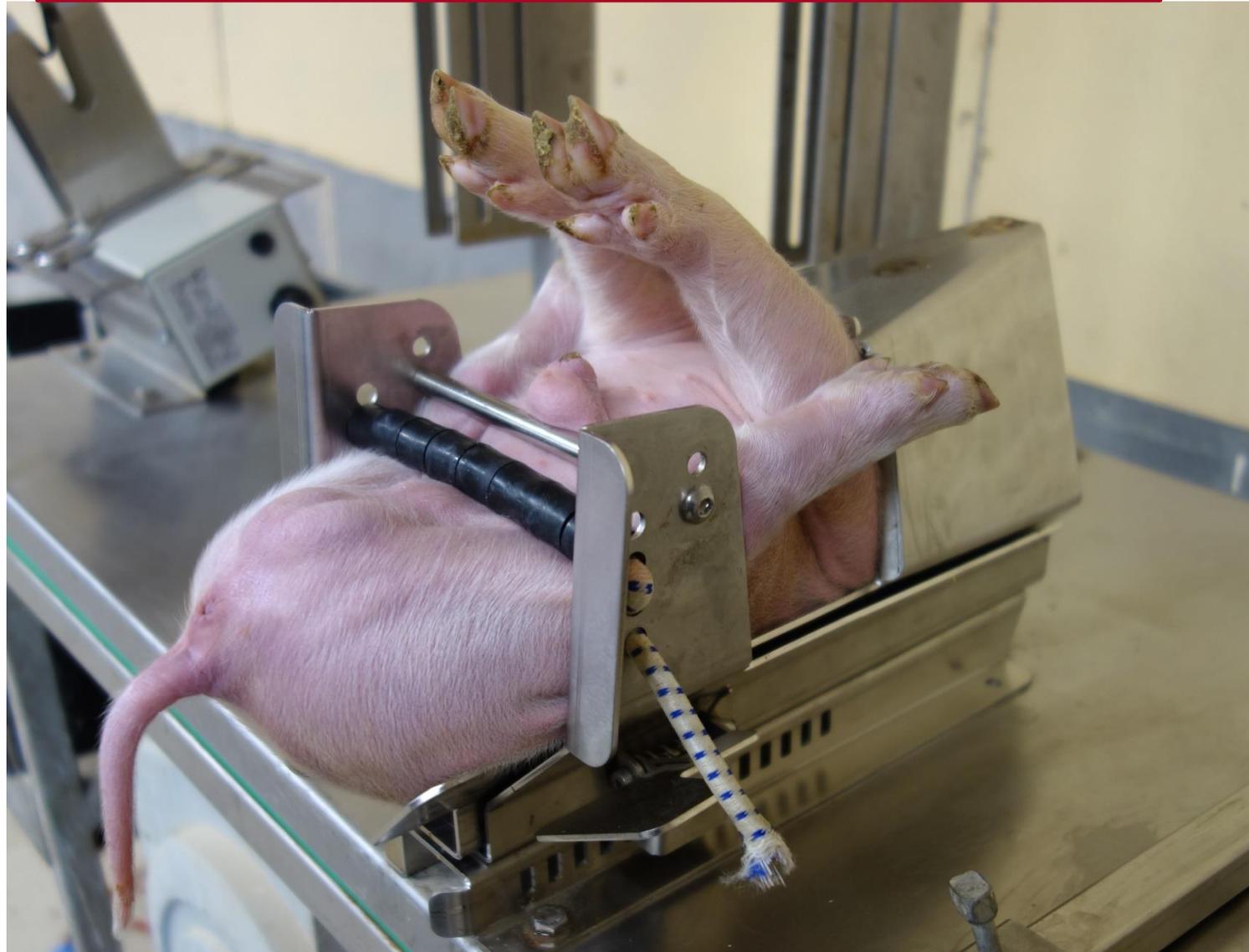
Castration bench

OBS: wrong angle!

New castration bench



New castration bench

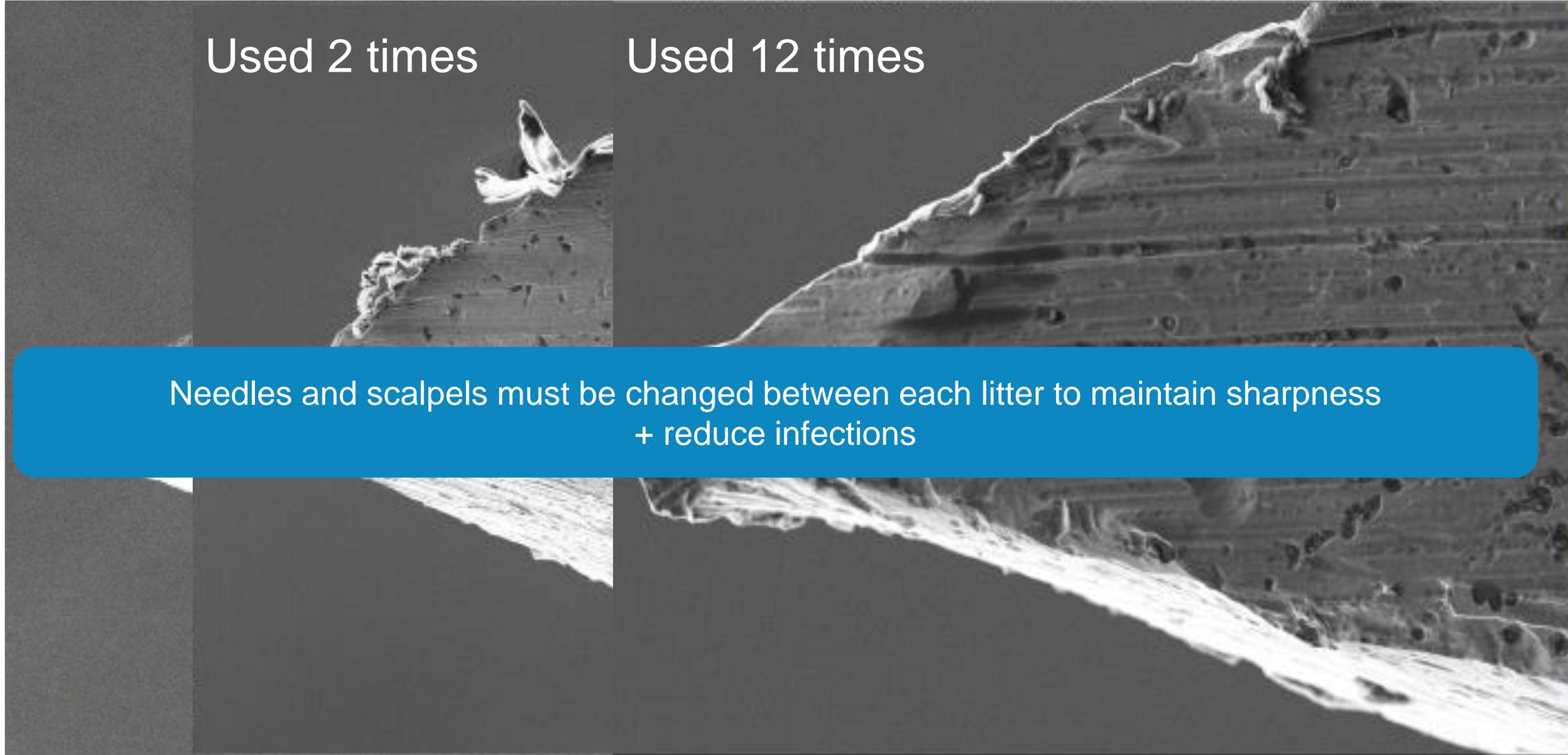


Change between each litter - new and used scalpels

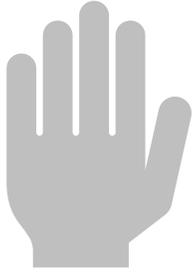
Used 2 times

Used 12 times

Needles and scalpels must be changed between each litter to maintain sharpness + reduce infections



Gloves must be used!



Vinyl gloves

- Cheap
- Break easily
- No effective protection
- Contain environmentally harmful compounds



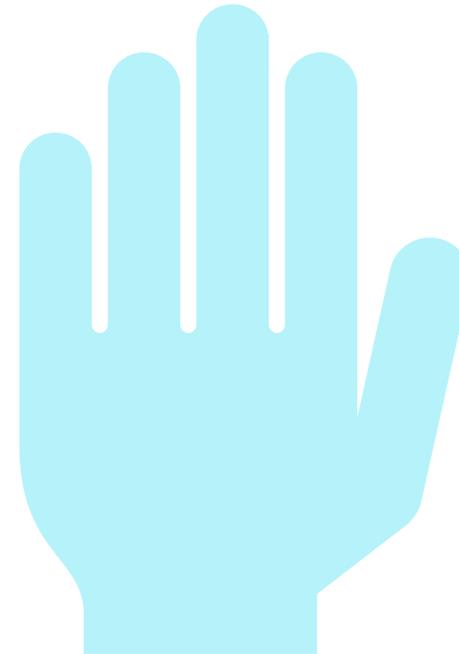
Latex gloves

- Most effective
- Allergic reaction to natural material



Nitrile glove

- Most expensive
- Longest chemical time break through time
- Some protection against microorganisms



Use nitril gloves!

Important: there are several types and prices.

- Use the *cheapest* if you change between each litter
- Use the *expensive* if you use disinfectant between each litter

Trick 1: Use double layer of gloves
– change the outer layer between each litter

Trick 2: Use cotton gloves under the nitril gloves
– change between each litter
(cut the fingertips off the cotton gloves)

Wash cotton gloves at 60 °C

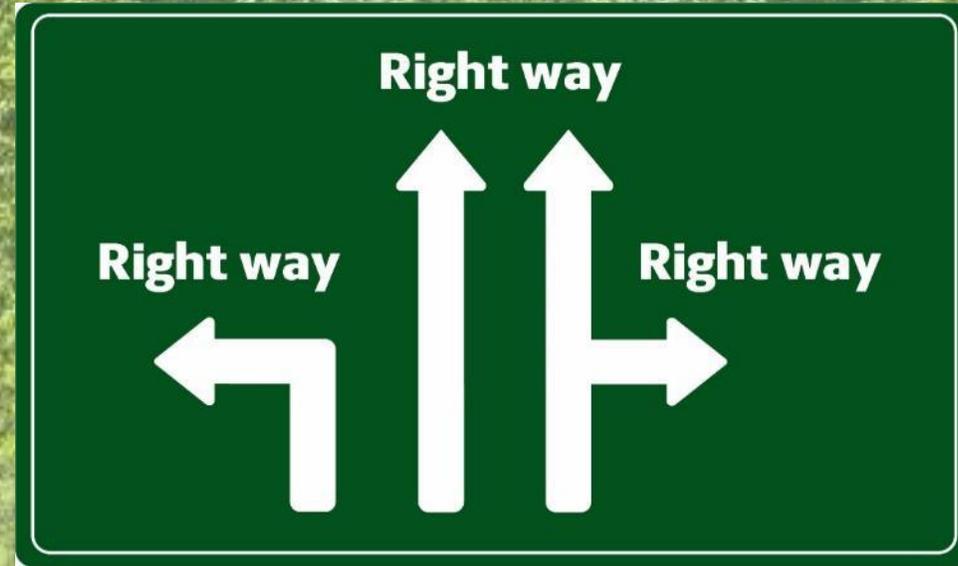


Castration

Local anaesthesia

Total anaesthesia

Male pig production



Immunocastration

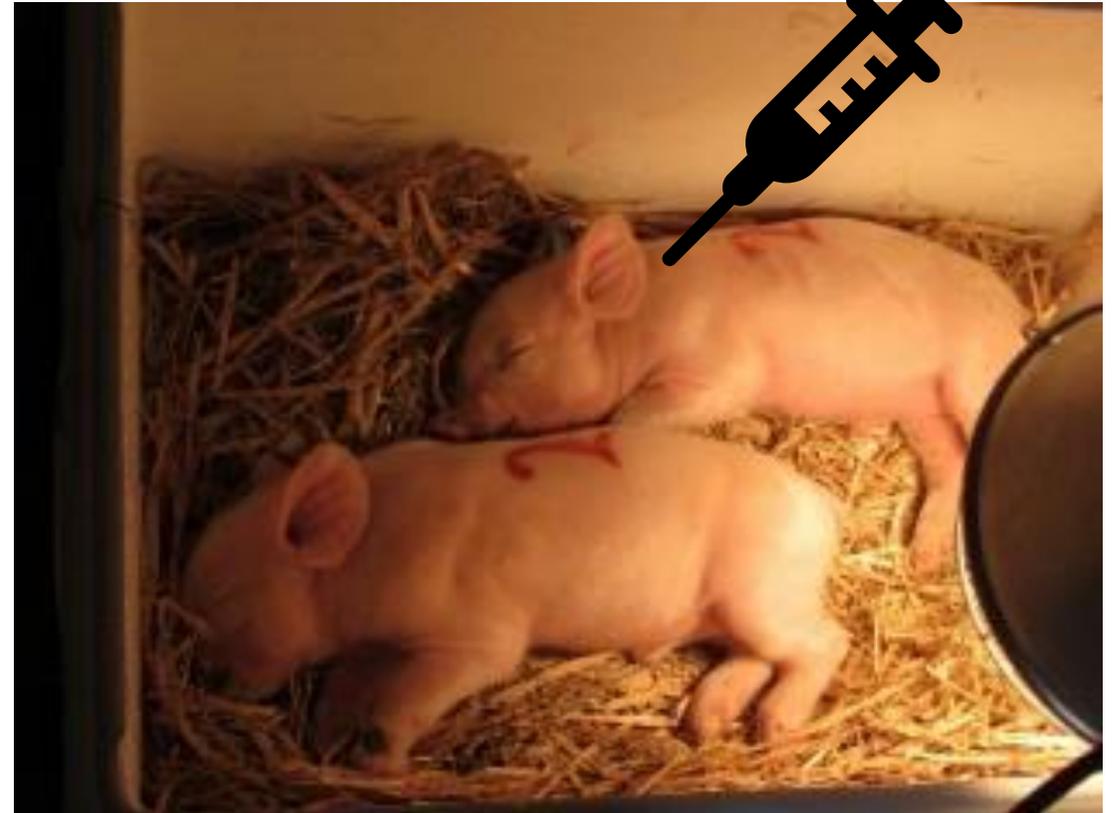
Semen sorting

Total anaesthesia



Isofluran or CO₂

Example Ketamin



Total anaesthesia Isofluran



Price (DKK) total or local anaesthesia – without work costs - our best shot!

Basis cost gas:
700 sows
2*equipment each DKK 21,000
Increased mortality?

Analgesia	X	X	X	X	X
Local anaesthesia	X	-	X	-	X
CO₂ anaesthesia	-	X	X	-	-
Isofluran	-	-	-	X	X
Total costs - castration	3.70	5.60	8.10	8.70	11.20

Total anaesthesia with Ketamin



Total anaesthesia with Ketamin



Other countries?

Castration

Male pig production
% of males

Local anaesthesia

Total anaesthesia

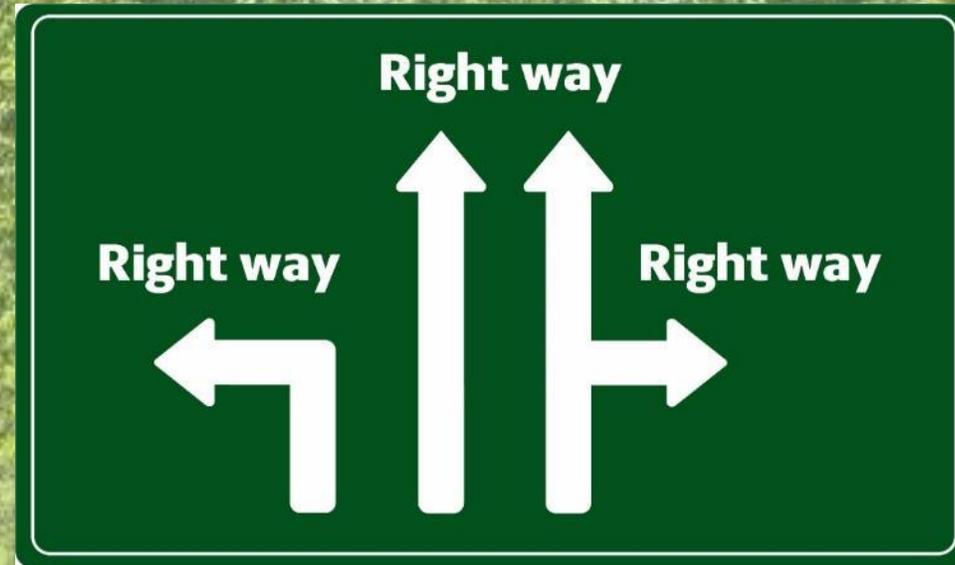


Castration

Local anaesthesia

Total anaesthesia

Male pig production



Immunocastration

Semen sorting

Castrates, male pigs and immunocastration

Purpose

 Is it enough to select among the D boars for low boar taint?

 What is the effect of immunocastration?

 Productivity

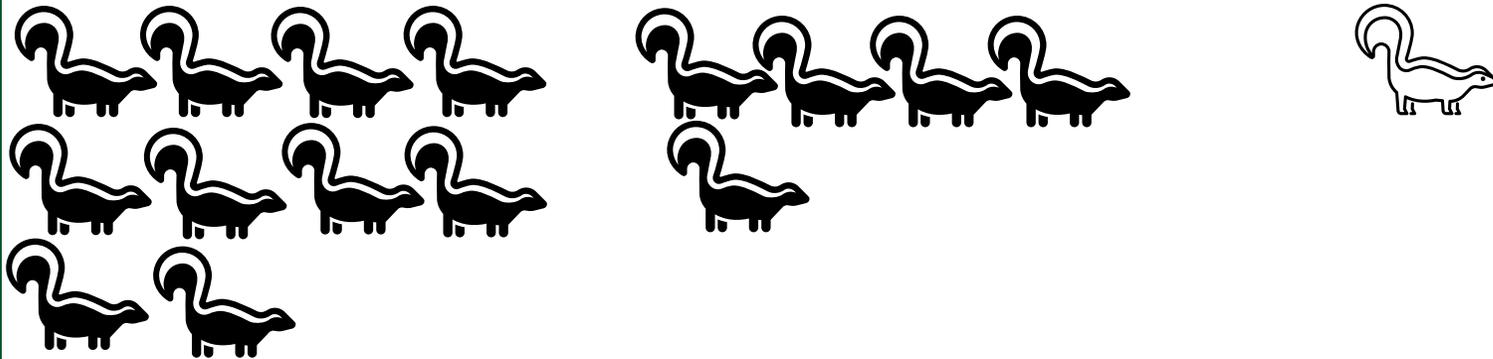
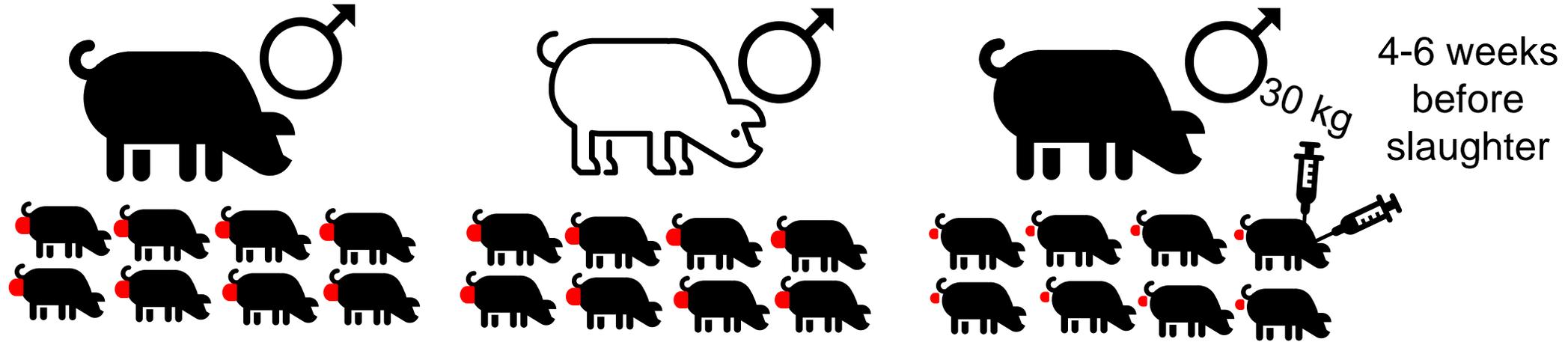
 Boar taint

 Behaviour

 Economy

.....compared to castrates and male pigs

Selecting D fathers for boar taint & immunocastration



Results productivity: castrates, male pigs and immunocastrates

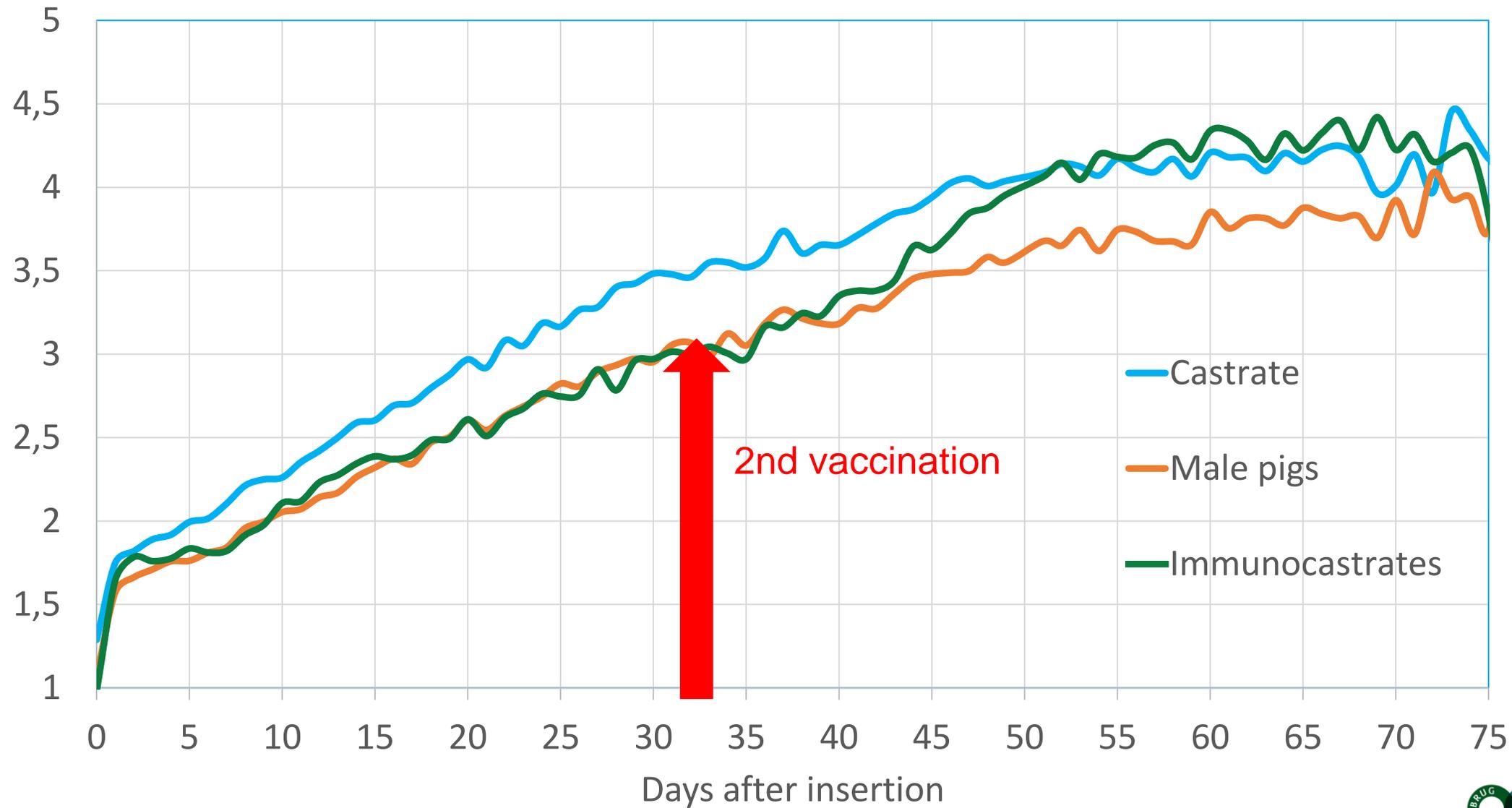
DanBred DLY	Castrates	Male pigs	Immuno-castrates
g/day	1196 ^{ab}	1212 ^a	1180 ^b
FEsv/day	3.30 ^a	2.92 ^b	3.07 ^c
FEsv/kg	2.76 ^a	2.41 ^b	2.61 ^c

Results productivity: castrates, male pigs and immunocastrates

DanBred DLY	Castrates	Male pigs	Immuno-castrates
g/dag	1196 ^{ab}	1212 ^a	1180 ^b
FEsv/dag	3.30 ^a	2.92 ^b	3.07 ^c
FEsv/kg	2.76 ^a	2.41 ^b	2.61 ^c
Lean meat %	60.1 ^a	63.5 ^b	62.6 ^c
Slaughter loss	1.33 ^a	1.36 ^b	1.36 ^b

Feed intake/day

FEsv/day



Penile injuries!



Penile injuries

Sex	Castrate	Male pigs	Immuno-castrate
No penile	218	197	196
No injuries (%)	87	89	92
Not developed (%)	88	3	2

Behaviour

Aggression

Pushing

Riding



Before vaccination:

Castrates < male pigs & immunocastrates

After vaccination:

Castrates & immunocastrates < male pigs

Economy – basis DKK/pig

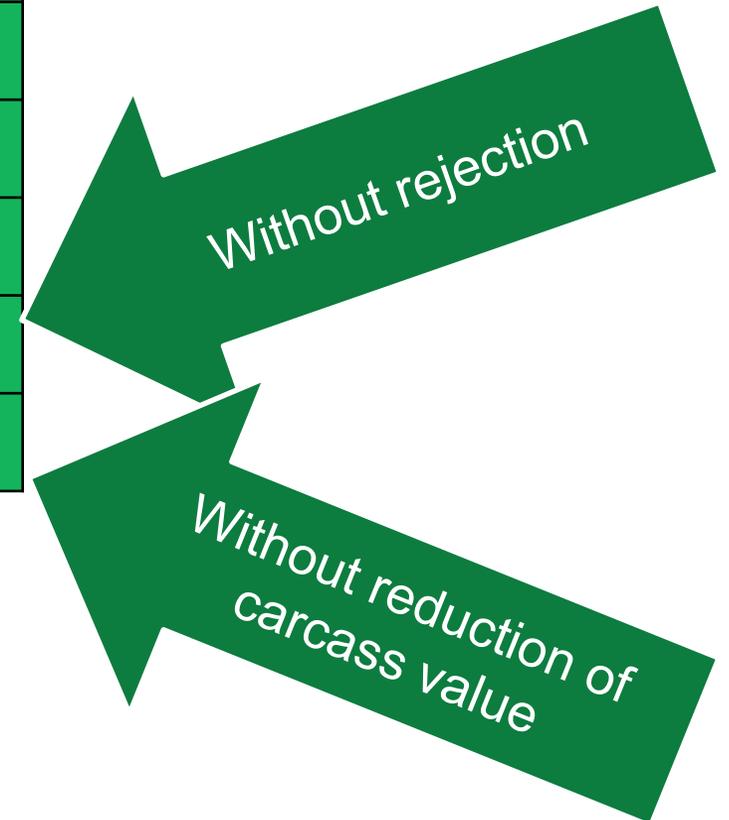
Insertion & carcass weight (30-89 kg)
Price reduction male pigs DKK 0.31/kg
Rejected DKK 4.6/kg (April 2021)
Feed price DKK/1.57/FEsv (5 year)
Pork price (5 year)

Castration costs:
Analgesia DKK 0.72
Local anaesthesia DKK 2.93
Salary DKK 2.50
Lower mortality DKK 2.00
Total DKK 8.15

Improvac costs:
Salary: DKK 1.50
Vaccine: DKK 24.00

Economy

	Castrates	Male pigs	Improvac
Castration DKK/pig	-8.15	-	-
FEsv/kg	0	-0.35	-0.15
Gain g/day	0	+16	-16
Lean meat%	0	+3.4	+2.5
Economy, DKK/pig	-	59.1	8.2
MAX rejected	-	14.4%	1.6%

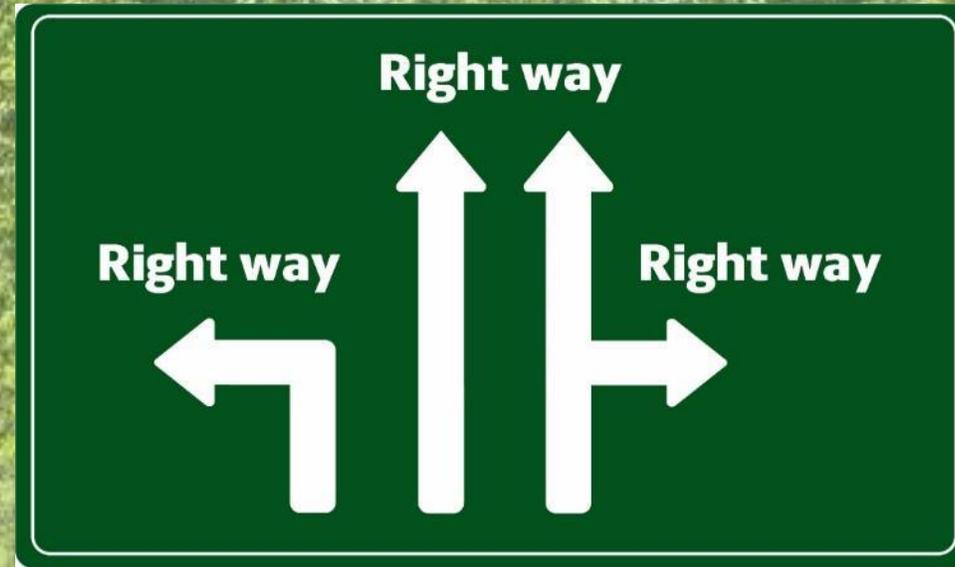


Castration

Local anaesthesia

Total anaesthesia

Male pig production

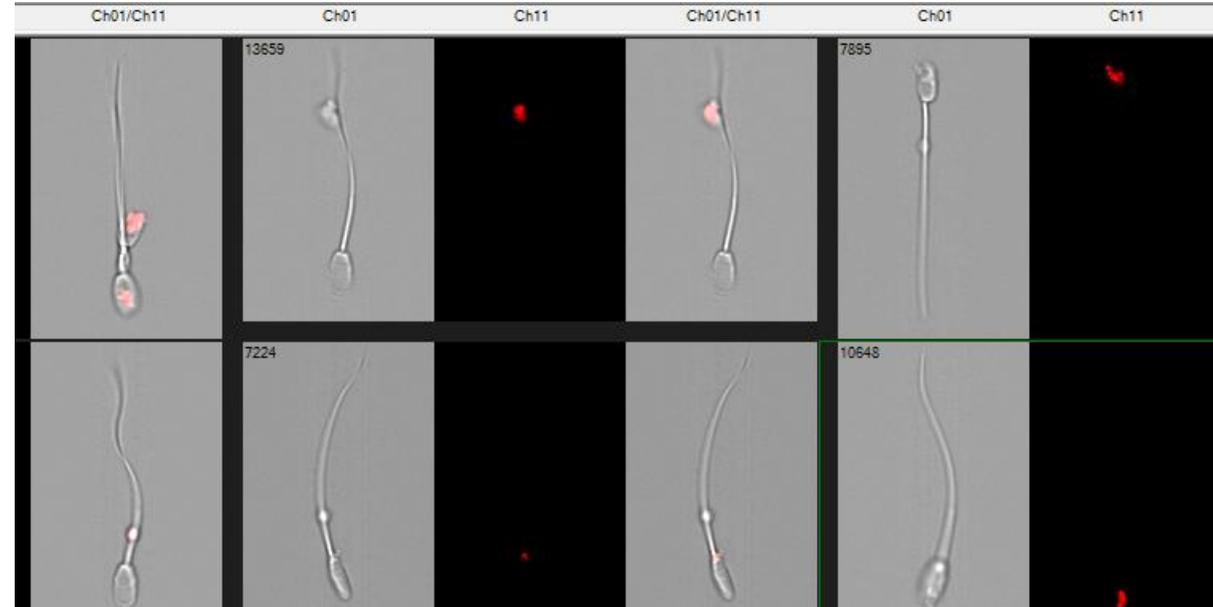


Immunocastration

Semen sorting

Sorting semen

- 🐷 New article on Japanese results
 - 🐷 Sorting semen from mice 🐭🐭🐭🐭🐭 🤪
 - 🐷 Patented to all species incl. pigs!
- 🐷 The idea was to bind antibodies on the tail of the semen cell to stop movement
- 🐷 We tested the method with different antibodies
 - 🐷 We contacted the Japanese professor and bought the same antibodies he had used
 - 🐷 We tried different **humane** antibodies on boar semen – no result
 - 🐷 Finally we tested it on **human** semen – no result
 - 🐷 Then the project stopped!
- 🐷 The cattle method is too slow



Castration

- 🐷 Local anaesthesia and analgesia **MUST** be used
- 🐷 Implement good work routines
- 🐷 Do not castrate before the anaesthesia has had time to work - this also makes castration easier!
- 🐷 Change scalpels and needles for each litter
- 🐷 Use nitril gloves

Producing male pigs

- 🐷 Sorting boar semen does not work
- 🐷 Sorting fathers (D boars) reduces boar taint – but not enough!
- 🐷 Immunocastration
 - 🐷 Reduces boar taint markedly
 - 🐷 But does not remove boar taint
 - 🐷 Reduces aggressive behaviour
 - 🐷 Economy is equal to producing castrates
 - 🐷 **BUT OUR MAIN MARKETS WILL NOT BUY THEM.**

TAK og husk!

Vær altid opdateret på den seneste faglige viden

Tilmeld dig **Nyhedsmail** fra
SEGES Svineproduktion på
www.svineproduktion.dk

 facebook.com/SegesSvineproduktion

