

# Experiences with bringing animals into the lab: the pig as an example

Harmonisation of the Care and Use of  
Agricultural Animals in Research

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## Norwegian pig breeds

There are large differences between breeds and strains, e.g. haematology in Durocs and Norwegian Landrace. This must be taken into account when choosing pigs for research, or when evaluating the results of research.

# Diseases of pigs which may interfere seriously with research in Europe

- Sarcoptic mange (*Sarcoptes scabiei* var. *suis*)
- Enzootic pneumonia (*Mycoplasma hypopneumoniae*)
- Pleuropneumonia (*Actinobacillus pleuropneumoniae*)
- Proliferative enteropathy (*Lawsonia intracellularis*)
- Swine dysentery (*Brachyspira hyodysenteriae*)

# Requirements for marketing «healthy piglets»

- **Nearly all piglets in Norway**
- **Clinically free from**
  - *Mycoplasma hyopneumoniae* (eradicated in 2009)
  - *Brachyspira hyodysenteriae*
  - *Sarcoptes scabiei*
  - Atrophic rhinitis
- **In addition**
  - Protection against infections
  - Use of medicine
  - Breeding

# SPF (Specific Pathogen Free)

- **Three Nucleus and nine Multiplier herds**
- **More than 40 herds of sows**
- **Free from**
  - *Mycoplasma hyopneumoniae*
  - *Brachyspira hyodysenteriae*
  - *Actinobacillus pleuropneumoniae*
  - Toxin-producing *Pasteurella multocida*
  - *Sarcoptes scabiei*
- **Breeding herds also free from**
  - *Brachyspira pilosicoli*
  - *Lawsonia intracellularis*
  - *Ascaris suum*

Homemade stretcher with equipment for maintenance and monitoring of anaesthesia



Photo: Trygve Hillestad

Intubation is a difficult technique and requires a laryngoscope with a long blade



Photo: Trygve Hillestad

It is important to avoid hypothermia during anaesthesia. Insulated mats and blankets are useful.



Photo: Trygve Hillestad



The stretcher complete with anaesthetised pig



Photo: Trygve Hillestad

“The Pig Ambulance”



Photo: Trygve Hillestad



Transport of an anaesthetised pig

Photo: Trygve Hillestad

Anaesthesia of pigs requires a team of specialists each with their delegated tasks



Photo: Trygve Hillestad

# Scintigraphy



Photo: Trygve Hillestad

Anaesthetised pig in a decompression chamber



Photo: Trygve Hillestad

# Ketamine and its use in the pig

## Recommendations of the Consensus Meeting on Ketamine Anaesthesia in Pigs, Bergen 1994

**Ketamine Consensus Working Group: K. Boschert; P. A. Flecknell; R. T. Fosse (Convenor); T. Framstad; M. Ganter; U. Sjøstrand; J. Stevens and J. Thurmon\***

### Summary

Ketamine, when used as a mono-anaesthetic, does not appear to induce surgical anaesthesia in the pig. The addition of other drugs such as opioids, benzodiazepines and  $\alpha_2$ -adrenergic agonists deepens anaesthesia and enables major surgery to be performed. A decision-tree for the rational use of ketamine for both short and long-term anaesthesia in the pig under three different levels of procedure severity is presented.

**Keywords** Ketamine;  $\alpha_2$ -adrenergic agonist; benzodiazepine; opiate; pigs; swine; anaesthesia; analgesia; surgery



Can you tell me something about farrowing ?







Special care must be taken of newborn piglets



Computer-controlled  
dispenser for milk substitute

Photo: NVH



## The four parents . . . 1987

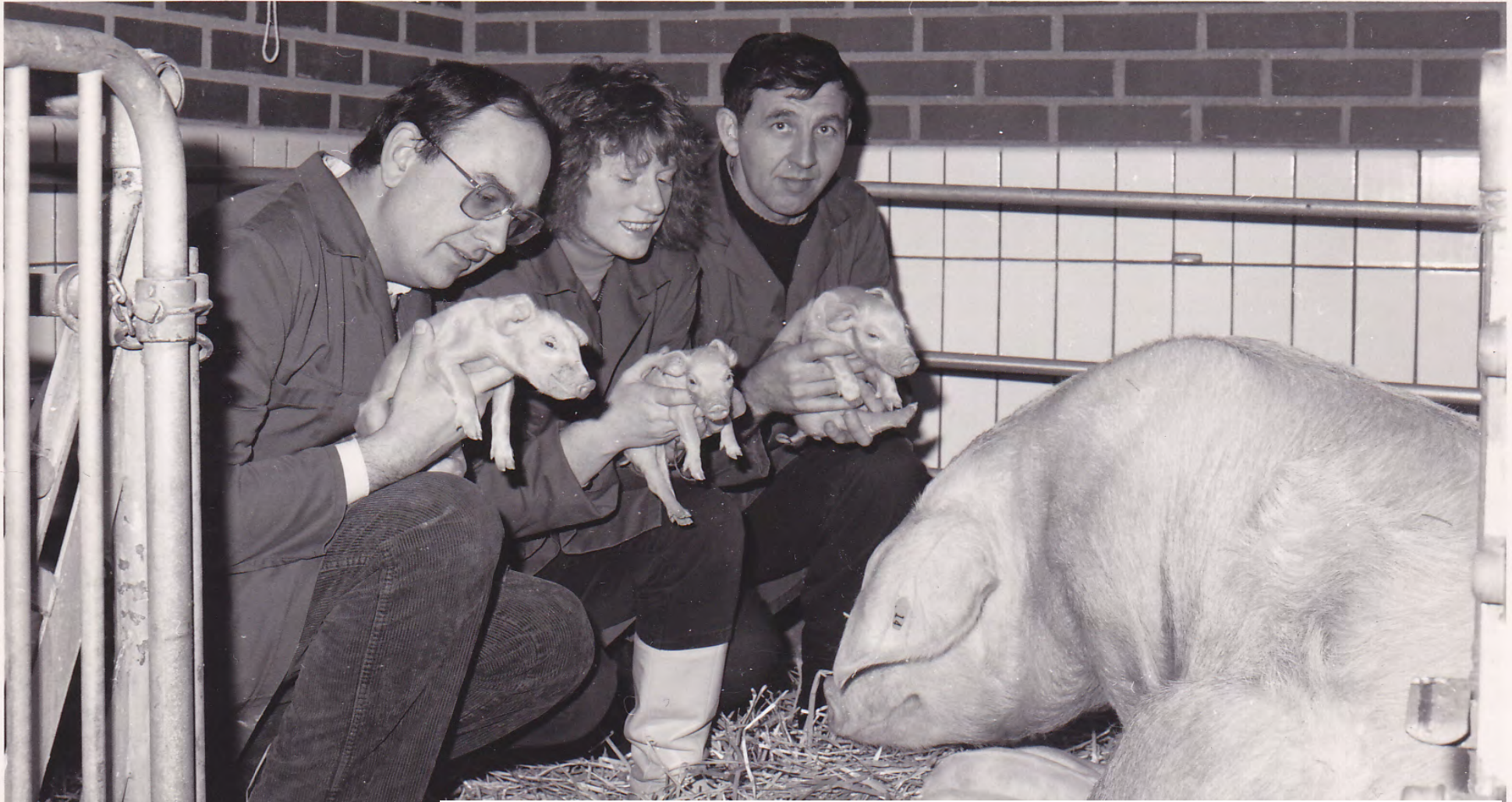


Photo: NVH

1987: the first litter born in Norway after embryo transfer (10 piglets)

Socialising with young pigs is important



Photo: NVH



Potentially painful procedures can be combined with a pleasant experience



Photo: NVH



A kiss? Yes, . . . if  
you are free from  
pandemic influenza



Photo: NVH





Hammock for stress-free immobilisation of unsedated piglets

Photo: Torunn Fosse



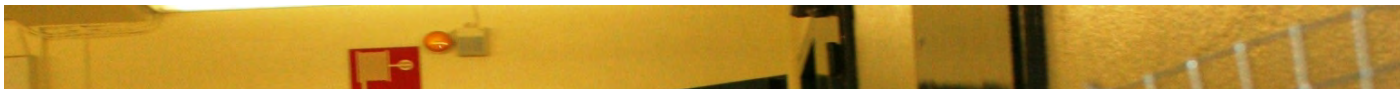
Dolorimeter in use on an unsedated pig



Photo: Torunn Fosse







Ramp used to film piglets running back to their mother.



Photo: Torunn Fosse



Home-made equipment to measure *Tuber spina scapula*

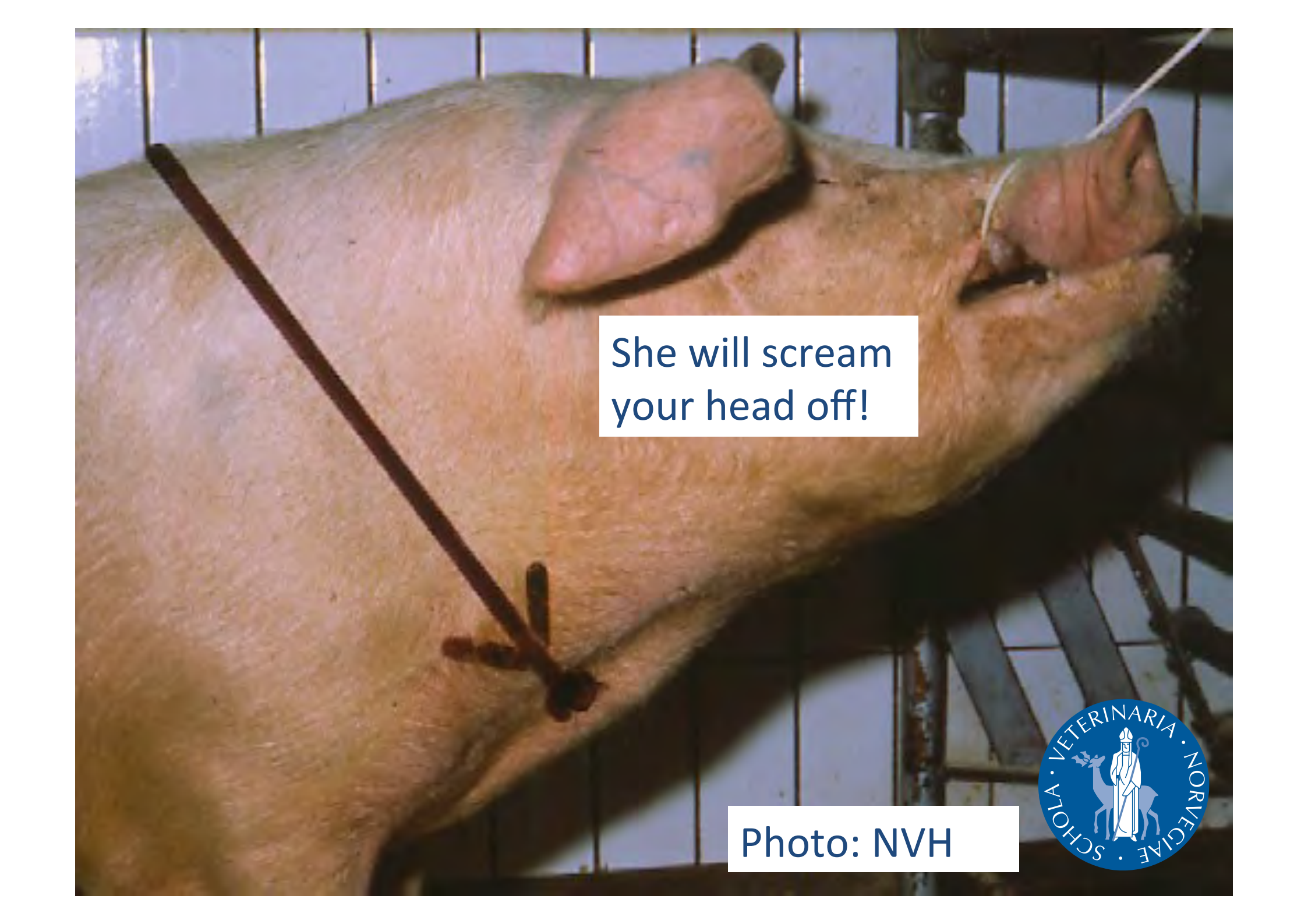
Camera to measure skin temperature





Attention to detail is important. This pig came from a farm where it was used to drink from a nipple, but it had problems using the one in the animal facility.



A photograph of a pig in a metal cage. A long, dark metal rod is inserted into the pig's back, extending from the left side of the frame towards the center. The pig's head is on the right, and its eyes are closed. The cage bars are visible in the background.

She will scream  
your head off!

Photo: NVH



But you can do like this  
without any fixation!

Photo: NVH





**Blood sampling from a small pig with relatively little stress**

Photo: NVH





**Catheter from  
the external  
jugular vein up  
to the pig's  
neck**

Photo: NVH



# Catheter in a home-made envelope



Homemade envelope to protect the indwelling catheter

Photo: NVH





**Would you like being here ?**

