

# Biosecurity, bugs & backdoors

European perspectives & experiences

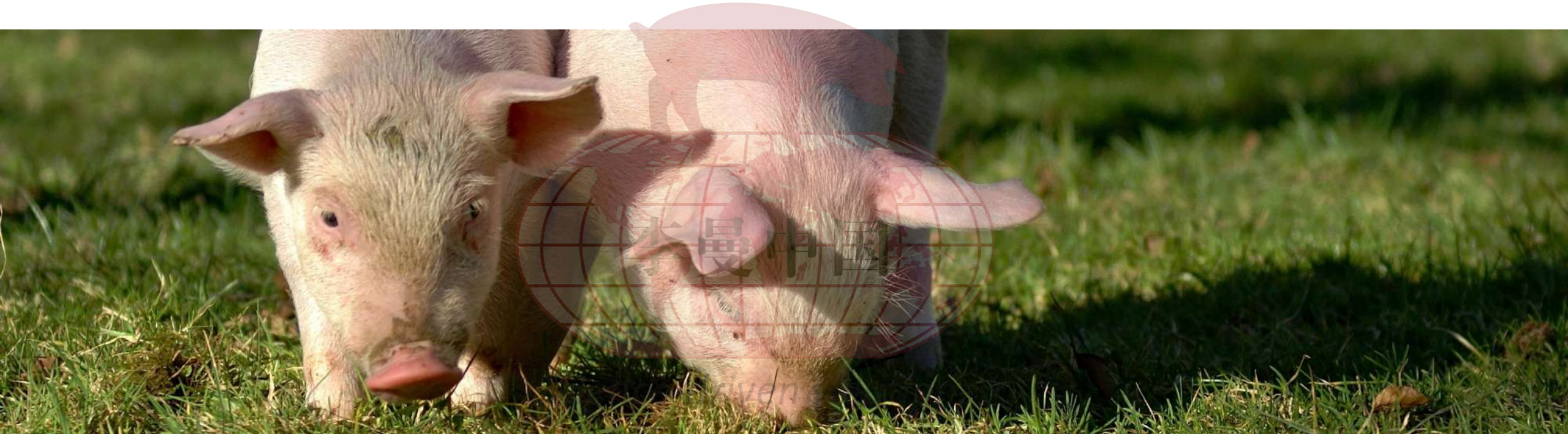


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OF PORCINE HEALTH  
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# Agenda

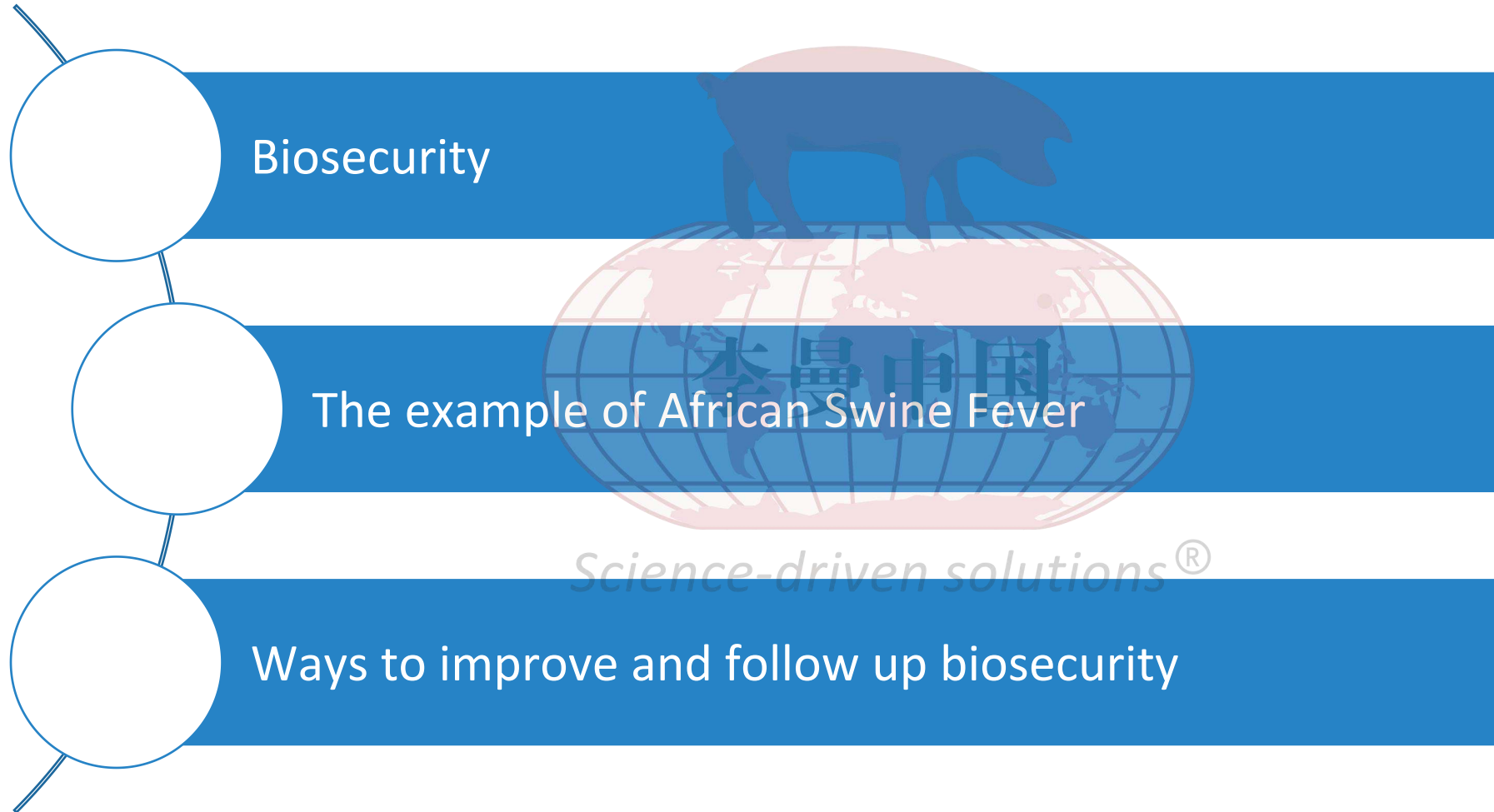


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# Introduction

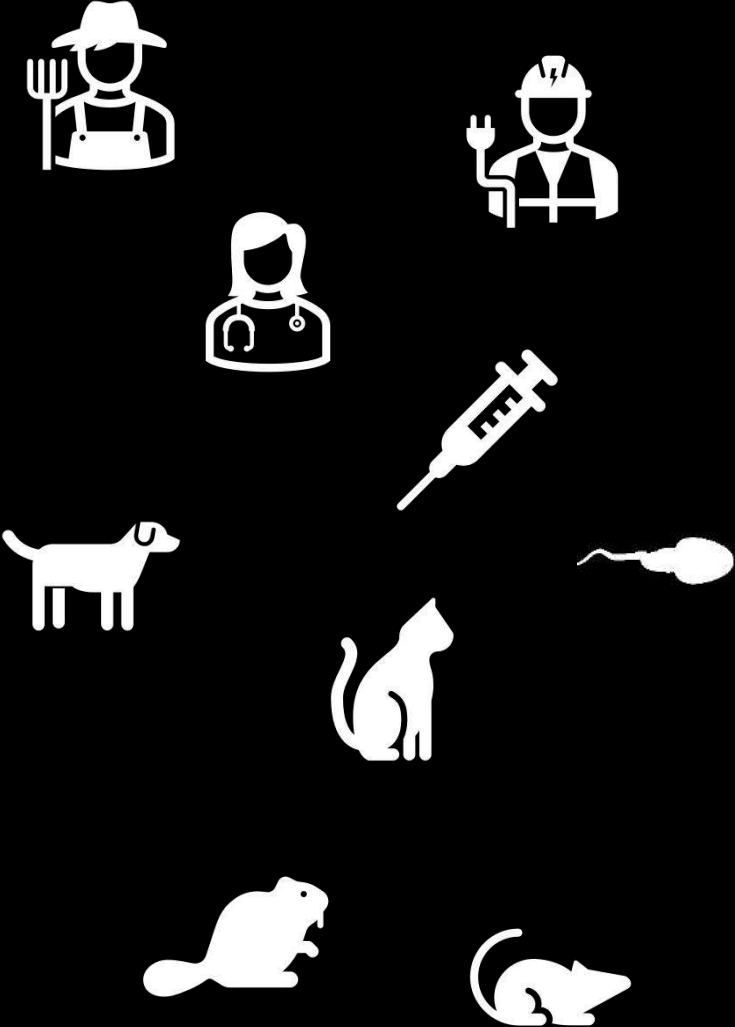


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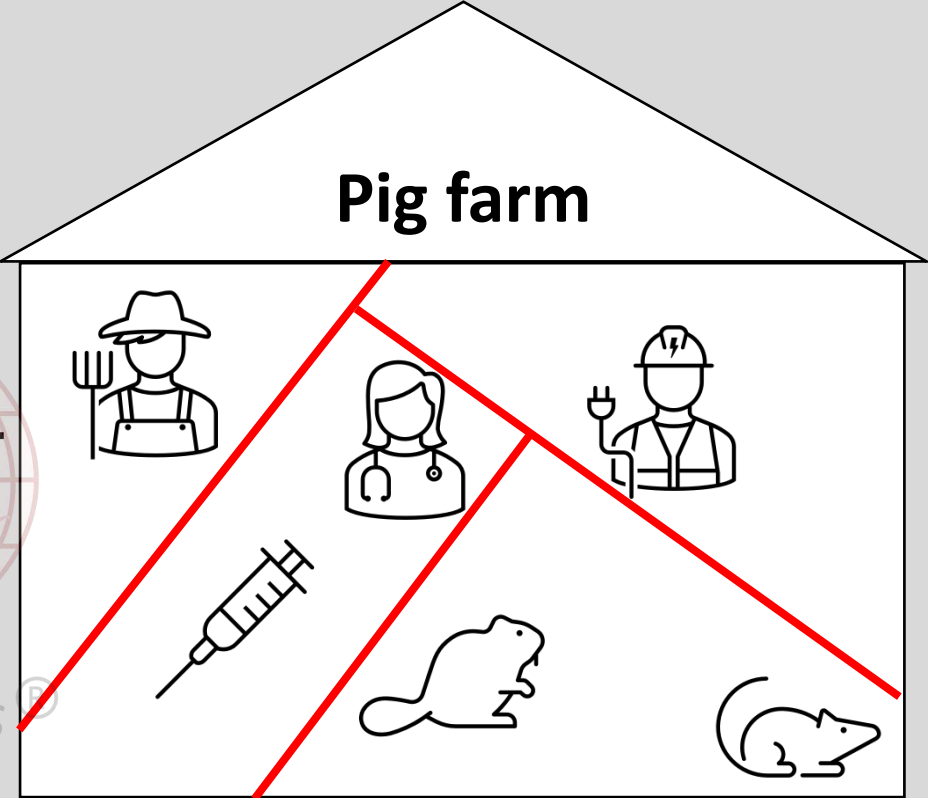


# External biosecurity



Control

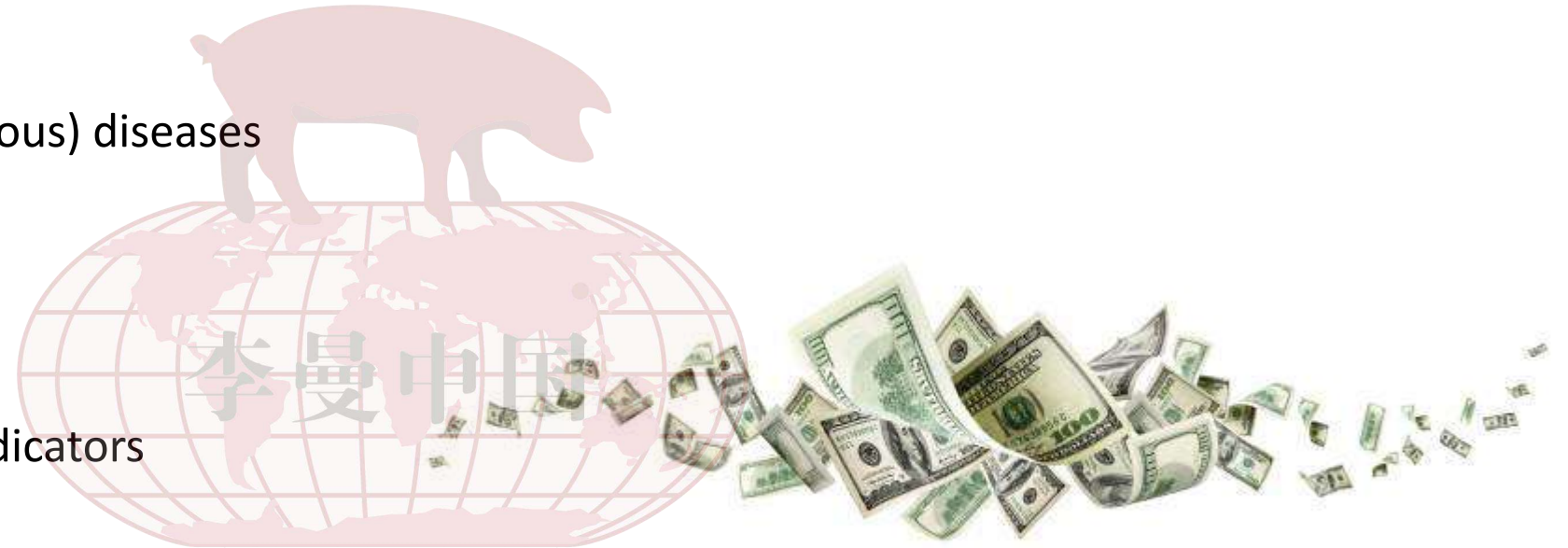
# Internal biosecurity



# The importance of external & internal biosecurity



- Less introduction of 'new' pathogens
- Lower likelihood of (infectious) diseases
- Less antimicrobials
- Better key performance indicators



BUT

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- **It is nearly impossible to predict the 'return on investment'**





# The importance of good hygiene



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Arnold et al. *Porcine Health Management* (2021) 7:13  
<https://doi.org/10.1186/s40813-021-00192-4>

Porcine Health Management

RESEARCH

Open Access

## Correlation of *Lawsonia intracellularis* positivity in quantitative PCR and herd factors in European pig herds

Mirjam Arnold<sup>1</sup>, Annelies Crienen<sup>2</sup>, Hanny Swam<sup>2</sup>, Stephan v. Berg<sup>3</sup>, Rika Jolie<sup>4</sup> and Heiko Nathues<sup>1,5\*</sup>



*Lawsonia intracellularis* is causing diarrhea, poor growth and sudden death in pigs. It can be found in most pig populations leading to large economic losses worldwide. Many potential risk factors for the occurrence of disease or seropositivity have been described. The current study therefore focused on herd characteristics in European countries associated with direct detection of the pathogen determined by quantitative polymerase chain reaction.

**Results:** A median number of less than 30 nursery pigs per pen was correlated to less positive nursery pigs ( $p < 0.01$ ) and generally less samples positive per herd ( $p < 0.05$ ) as well as a lower median of genome equivalents determined per herd ( $p < 0.05$ ). Routine use of zinc oxide at/around weaning, which was mentioned by 41.0% of all farmers, was correlated to higher number of positive nursery pigs ( $p < 0.01$ ) as well as higher median genome equivalents determined per herd ( $p < 0.05$ ). Slatted flooring of more than 78.0% of the surface in nursery units was correlated to lower number of positive animals ( $p < 0.05$ ) and a lower median of genome equivalents per herd ( $p < 0.05$ ). A weight of more than 7.8 kg at weaning was correlated to a higher number of positive growing pigs ( $p < 0.05$ ) as well as general higher number of positive samples/ herd ( $p < 0.01$ ).

**Conclusions:** Weaning and subsequent accommodation of nursery pigs seem to be of particular importance in prevention of infection with *Lawsonia intracellularis* and the spread of the pathogen within the herd.

**Keywords:** Control, Europe, Porcine proliferative enteropathy, Risk factor, Swine



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**Assessment of the current biosecurity status**



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# Assessment & monitoring of the biosecurity



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- Epidemiological characterization
- Biological examination
- Process analysis
- ...



Science-





# Epidemiological characterization



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## About biosecurity in pig production

→ What is biosecurity?  
→ Why biosecurity?  
→ Disease transmission routes

### External biosecurity

→ Purchase of breeding pigs, piglets and semen  
→ Transport of animals, removal of carcasses and manure  
→ Feed, water and equipment supply  
→ Visitors and farmworkers  
→ Vermin and bird control  
→ Location of the farm

### Internal biosecurity

→ Disease management  
→ Farrowing and suckling period

## About biosecurity in pig production

### What is biosecurity?

Biosecurity at a pig farm includes all measures taken to minimize the risk of introduction and spread of infectious agents and thus, includes all actions for keeping the pigs and the farm healthy. By taking these biosecurity measures and performing efficient management, on-farm animals are protected against both endemic and epidemic diseases (Dewulf and Van Immerseel, 2018).

A distinction is made between external and internal biosecurity. **External biosecurity** focuses on the **contact points** of the farm with the **outside world** and aims to prevent pathogens from entering or leaving the farm. This applies both to exotic diseases, which occur rarely in a country, as well as to endemic diseases, which are common in a country but do not occur at every farm (Ribbens et al., 2008). All measures taken to counteract **the spread of pathogens within a farm** are covered by **internal biosecurity** (Laanen et al., 2010; Anonymous, 2010).

Rodrigues da Costa et al. *Porcine Health Management* (2019) 5:4  
<https://doi.org/10.1186/s40813-018-0113-6> Porcine Health Management

RESEARCH Open Access

## Using the Biocheck.UGent™ scoring tool in Irish farrow-to-finish pig farms: assessing biosecurity and its relation to productive performance

Maria Rodrigues da Costa<sup>1,2\*</sup>, Josep Gasà<sup>2</sup>, Julia Adriana Calderón Díaz<sup>1</sup>, Merel Postma<sup>3</sup>, Jeroen Dewulf<sup>3</sup>, Gerard McCutcheon<sup>4</sup> and Edgar García Manzanilla<sup>1,5</sup>

Transboundary and Emerging Diseases

REVIEW ARTICLE

## Review of transmission routes of 24 infectious diseases preventable by biosecurity measures and comparison of the implementation of these measures in pig herds in six European countries

M. E. Fillipitzi ✉, A. Brinch Kruse, M. Postma, S. Sarrazin, D. Maes, L. Alban, L. R. Nielsen, J. Dewulf

First published: 09 November 2017 | <https://doi.org/10.1111/tbed.12758> | Citations: 41

Backhans et al. *Acta Veterinaria Scandinavica* (2015) 57:14  
DOI 10.1186/s13028-015-0103-5

AVS ACTA VETERINARIA SCANDINAVICA

RESEARCH Open Access

## Biosecurity level and health management practices in 60 Swedish farrow-to-finish herds

Annette Backhans<sup>1\*</sup>, Marie Sjölund<sup>1,2</sup>, Ann Lindberg<sup>3</sup> and Ulf Emanuelson<sup>1</sup>

# Epidemiological characterization



The screenshot shows the FarmBiosecurity website. At the top left is the logo "farmbiosecurity" with a stylized double arrow icon. A dark navigation bar contains the following menu items: "About", "Essentials", "Toolkit", "Crops", "Livestock", "Get help", "News", "Stories", and "Videos". The main content area features a large background image of a dog in a field with a globe overlay. The text "FarmBiosecurity app" is prominently displayed in the center. Below this, a breadcrumb trail reads "Home > Toolkit > FarmBiosecurity app". The heading "Science-driven solutions<sup>®</sup>" is positioned below the breadcrumb. On the left, there is an image of a hand holding a smartphone displaying the app interface. To the right of the phone, the text reads: "The FarmBiosecurity app is for people on the go who want to bolster biosecurity on their farm. It's based on the six biosecurity essentials, covering every aspect of your day-to-day activities. To make your biosecurity plan, simply select the actions that apply to you from the suggestions, or type in your own actions. Your selections become". On the right side of the page, there is a "Print this page" button and a small image of piglets with the text "Read the latest information on African swine fever".



# Biological examination



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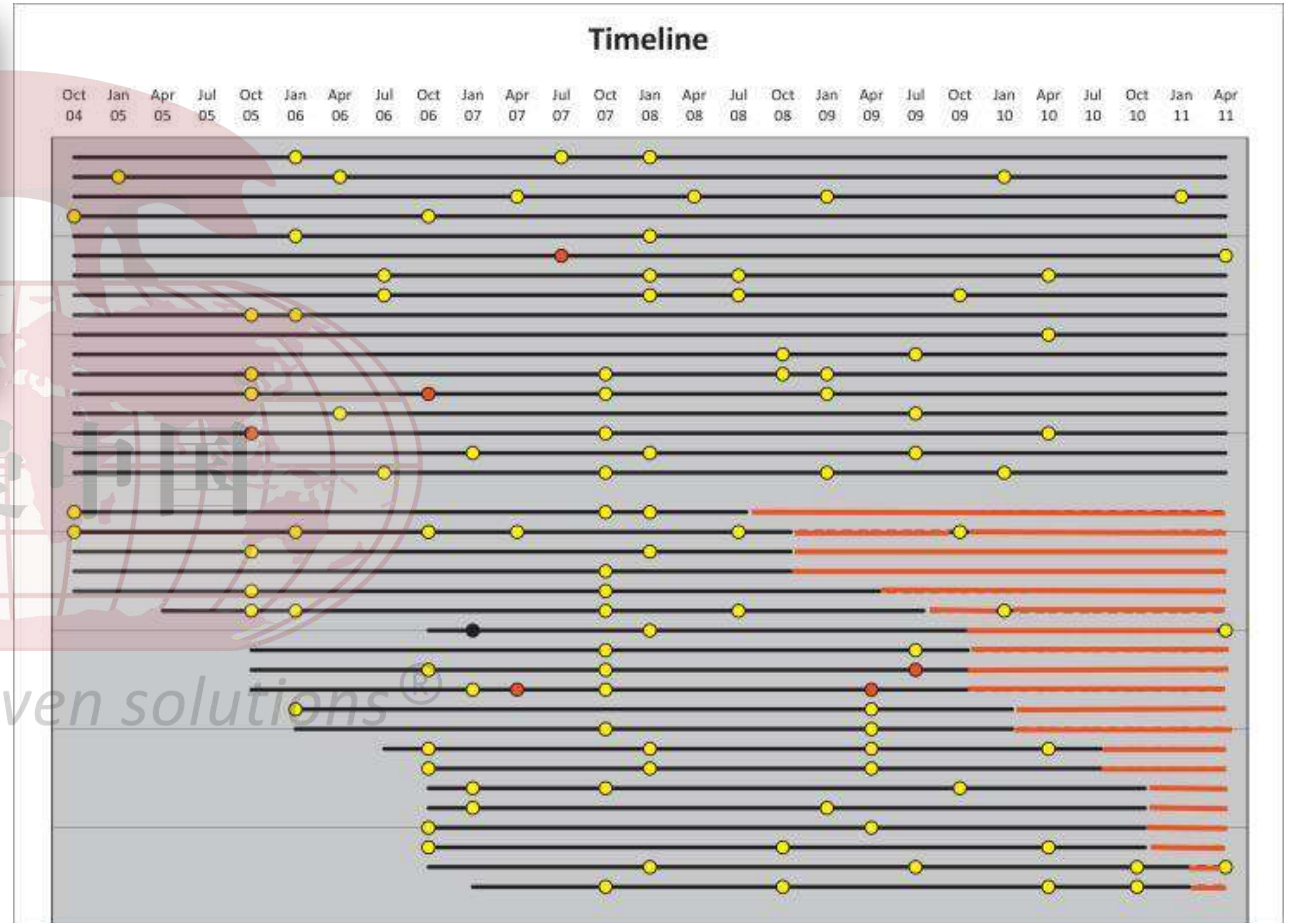
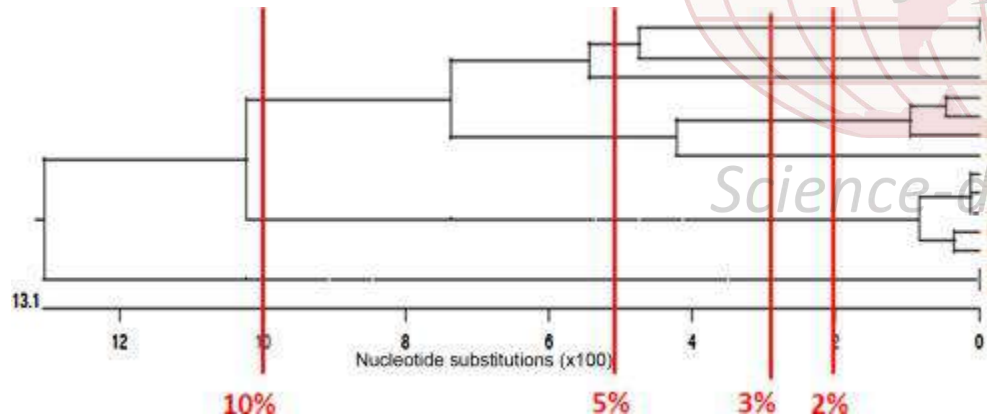


Preventive Veterinary Medicine  
Volume 112, Issues 1–2, 1 October 2013, Pages 109–117



## Epidemiological study of air filtration systems for preventing PRRSV infection in large sow herds

Carmen Alonso<sup>a</sup>, Michael P. Murtaugh<sup>b</sup>, Scott A. Dee<sup>c</sup>, Peter R. Davies<sup>a</sup>  







# Process analysis

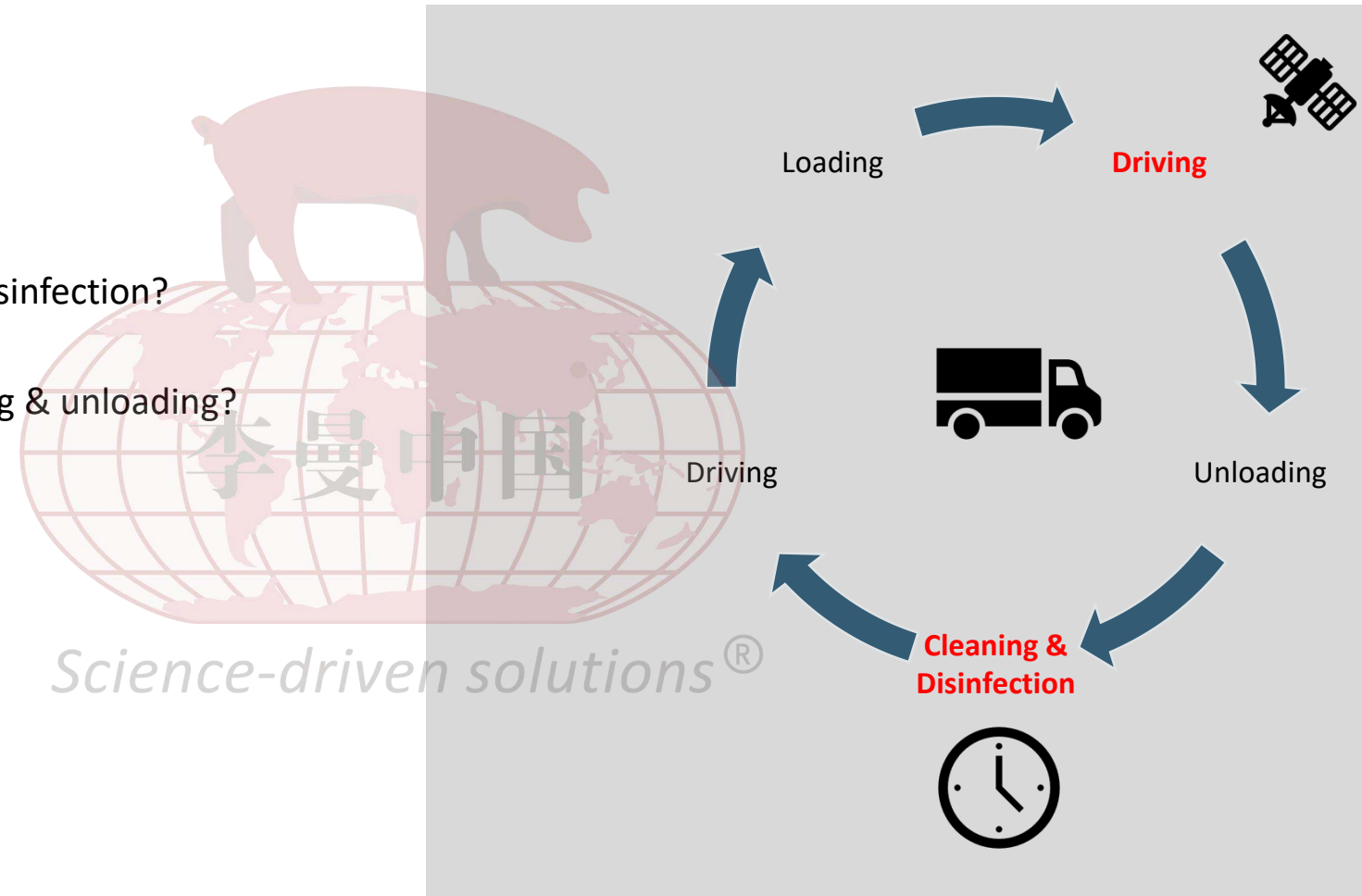


- External biosecurity

- e.g. 'transport of pigs'

- Time for cleaning & disinfection?

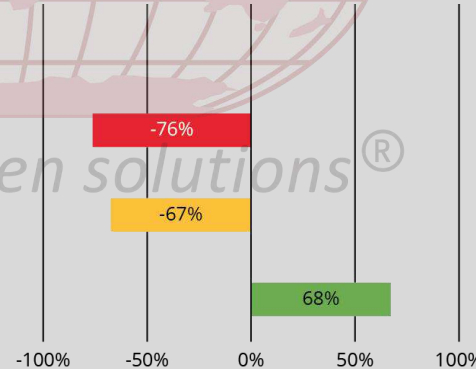
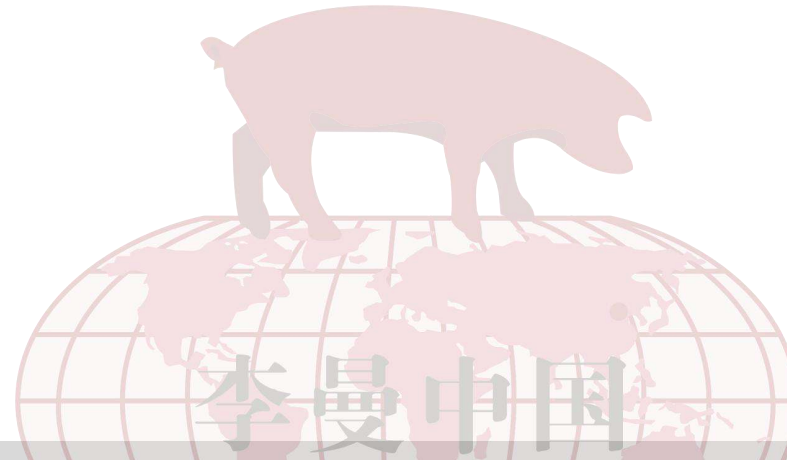
- Route between loading & unloading?



# Process analysis



- Internal biosecurity
  - e.g. 'movement of staff'



Source: [pigprogress.net](http://pigprogress.net)







# Biosecurity & ASF

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Experiences from Germany



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25 OCT 2024

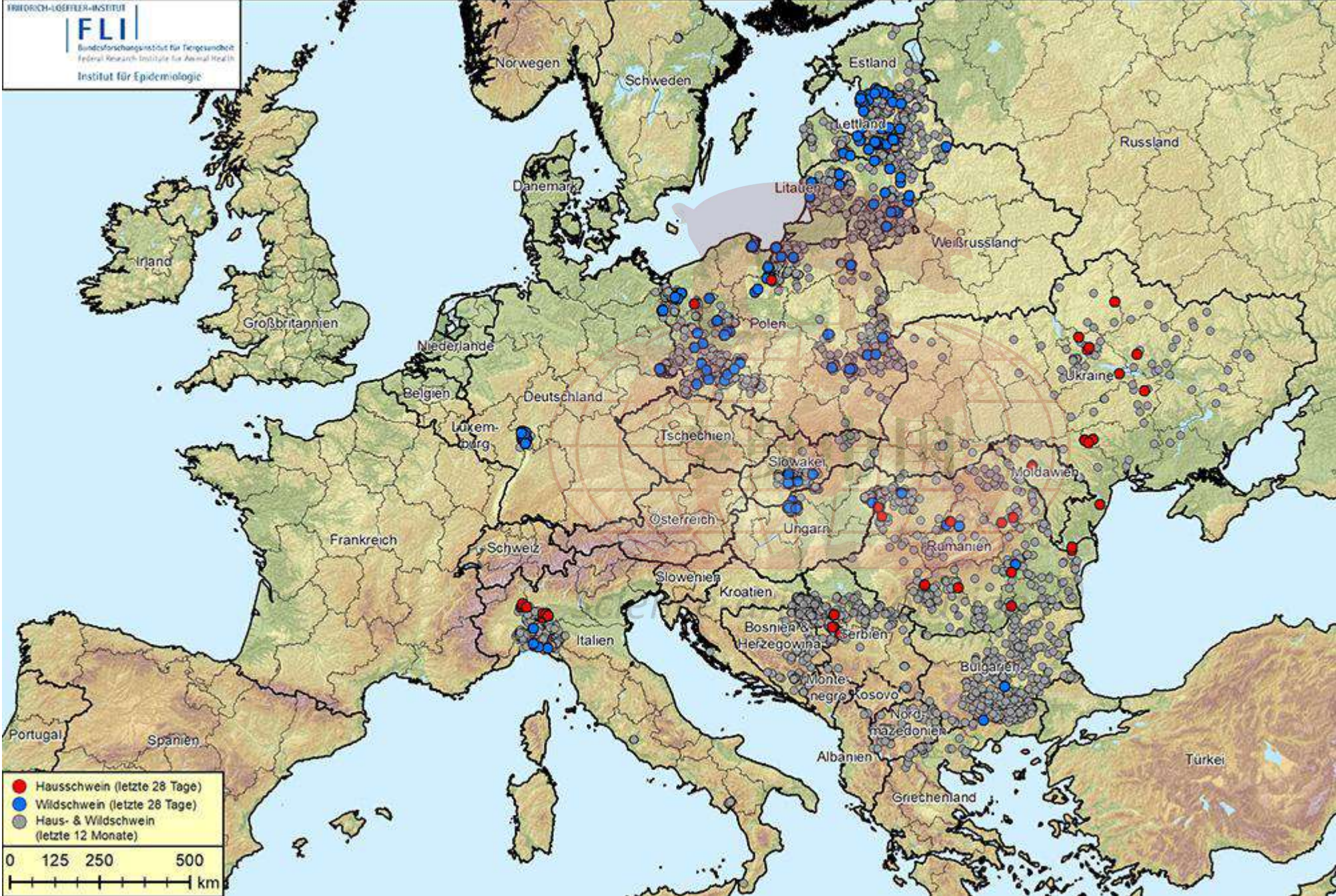
13. Lemman China Swine Conference

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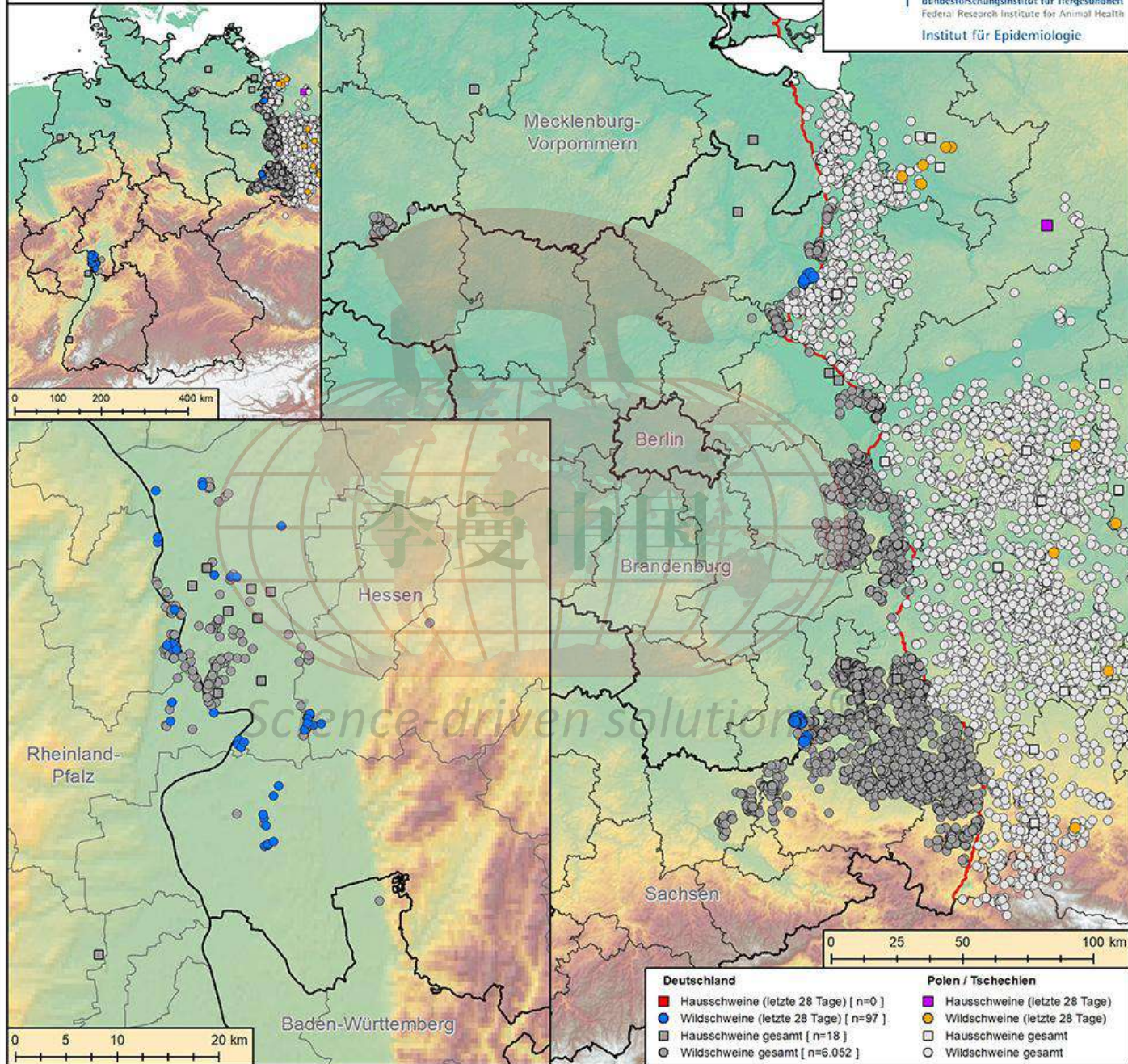
**Afrikanische Schweinepest (Genotyp II) in Albanien, Baltikum, Bosnien und Herzegowina, Bulgarien, Deutschland, Griechenland, Italien, Kosovo, Kroatien, Moldawien, Montenegro Nordmazedonien, Polen, Rumänien, Schweden, Serbien, Slowakei, Tschechien, Ukraine und Ungarn vom 24.09.2023 - 24.09.2024** Datenquelle: ADIS, TSN (Stand: 24.09.2024 - 12:15 Uhr)





# Afrikanische Schweinepest in Deutschland und Westpolen seit September 2020

Datenquelle: ADIS, TSN (Stand: 24.09.2024 - 12:15 Uhr)







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# Biosecurity concepts in these farms



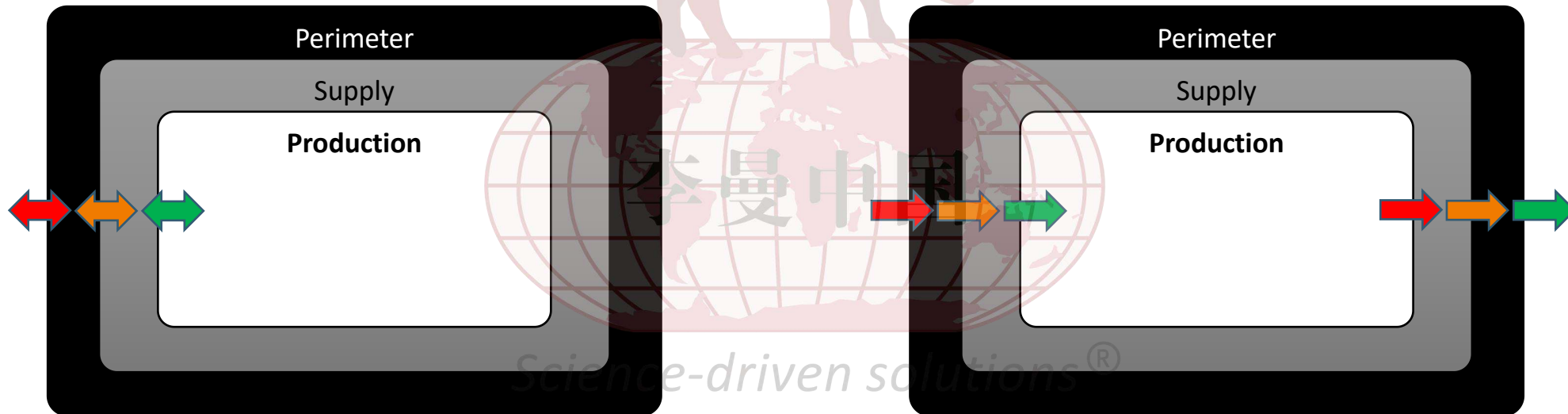
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One lock

vs.

Multiple locks





# Adequate fencing



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# Access control



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# Reduction of contacts



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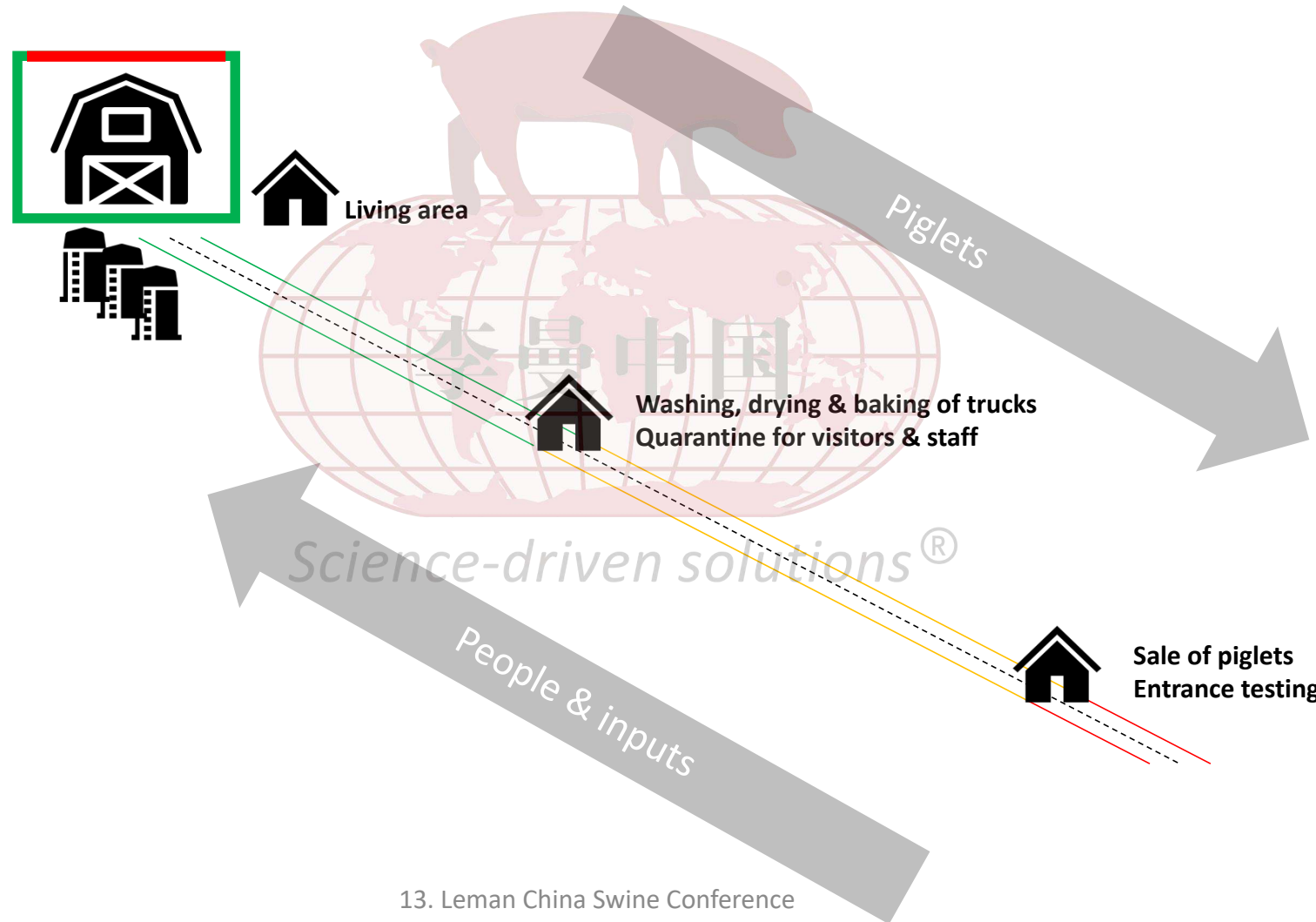


# My Chinese Experience



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# The human factor?



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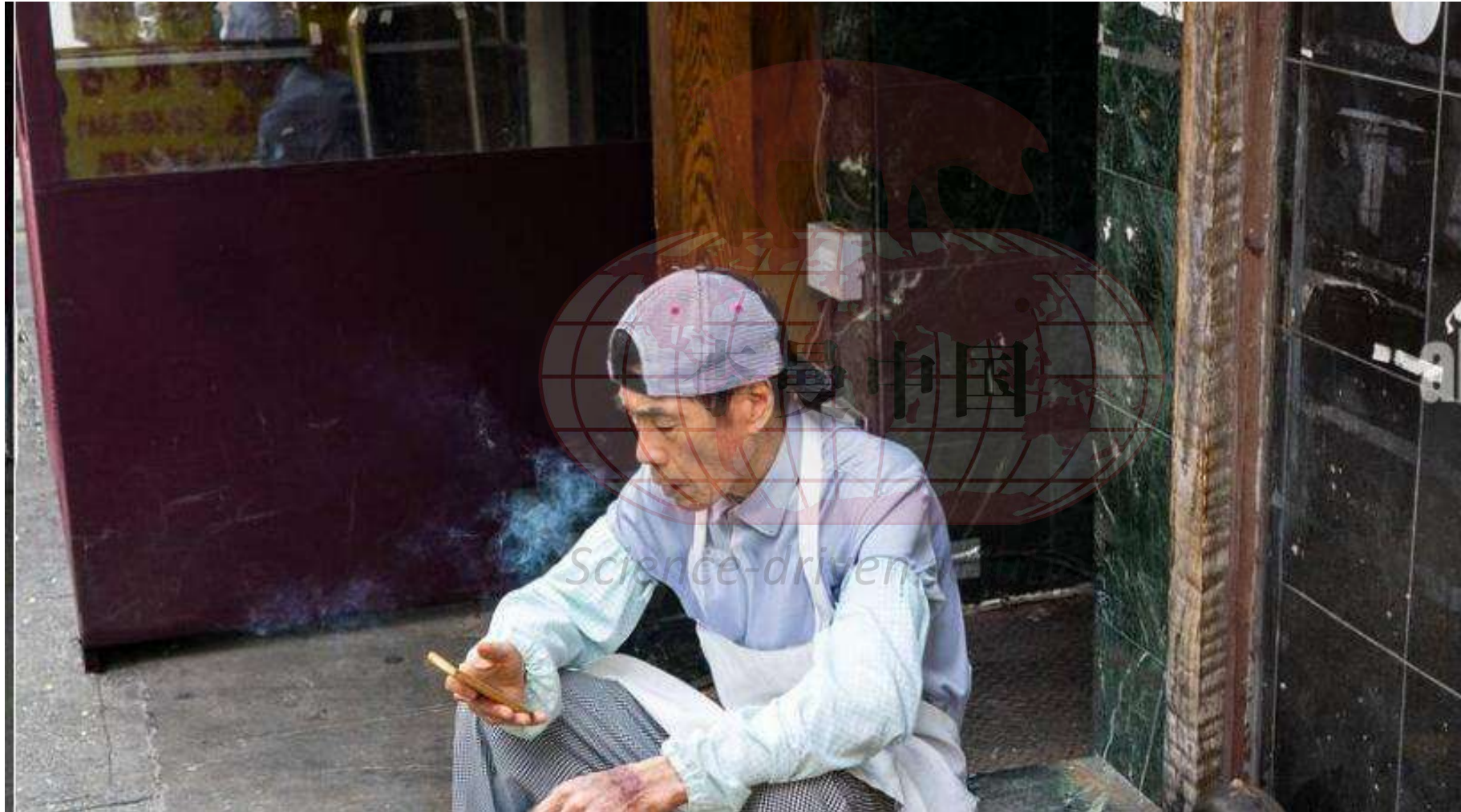
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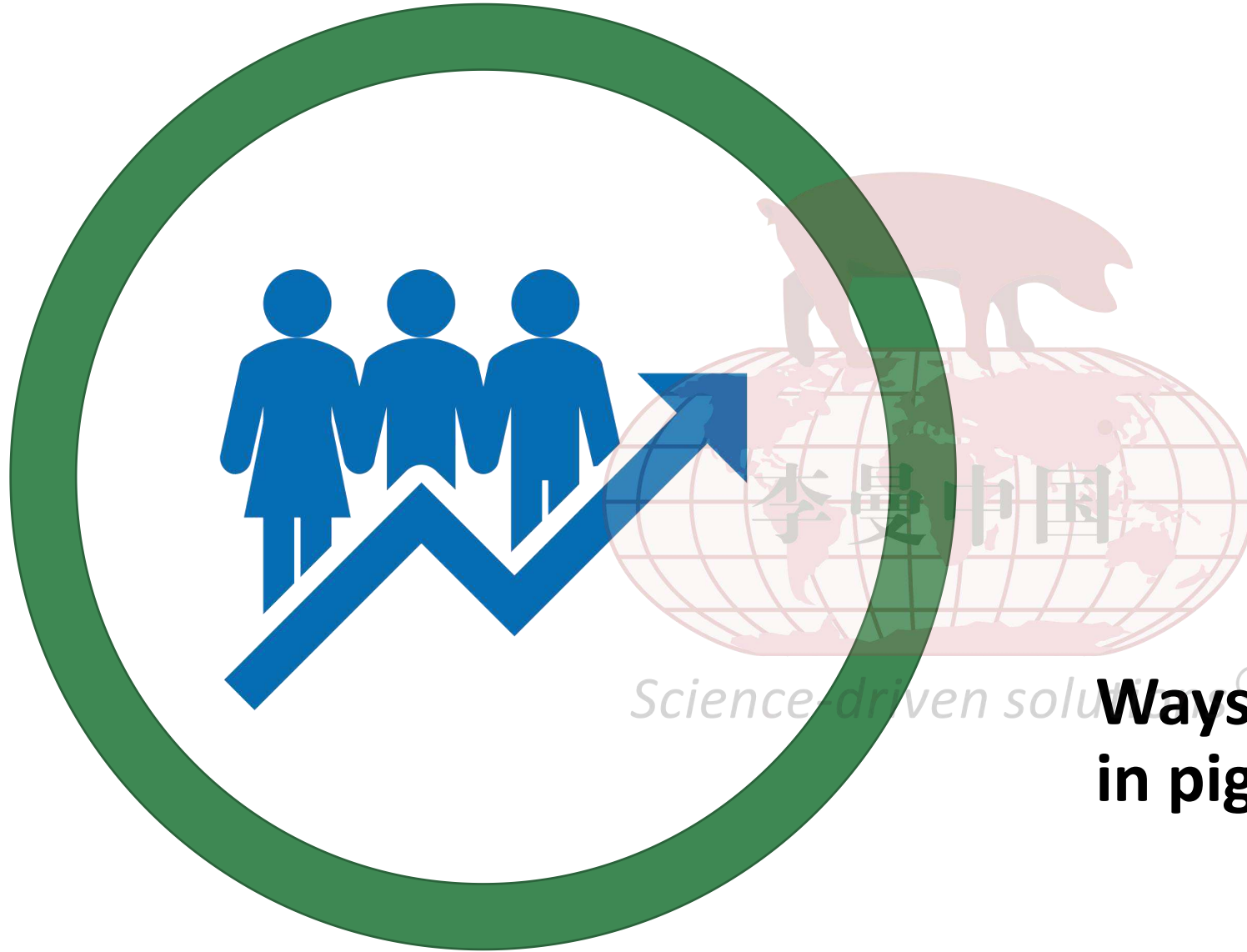


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*Science driven solutions* **Ways<sup>®</sup> to improve biosecurity  
in pig farms**

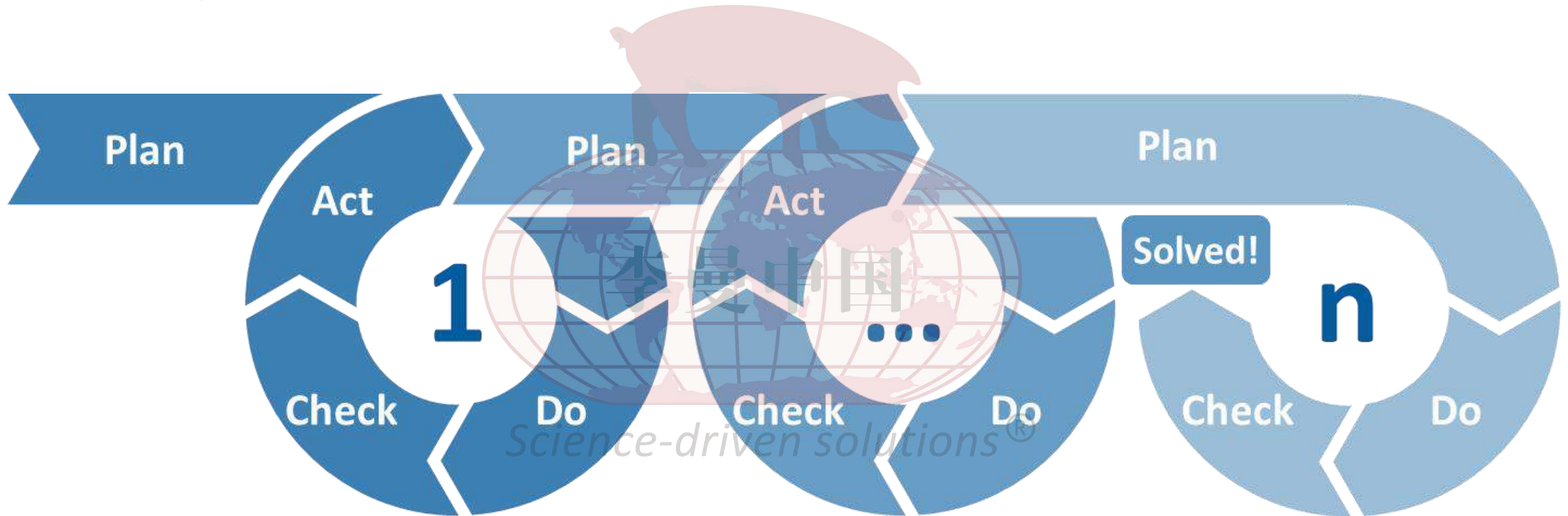
# In theory ...



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- PDCA - cycle





## In practice ...

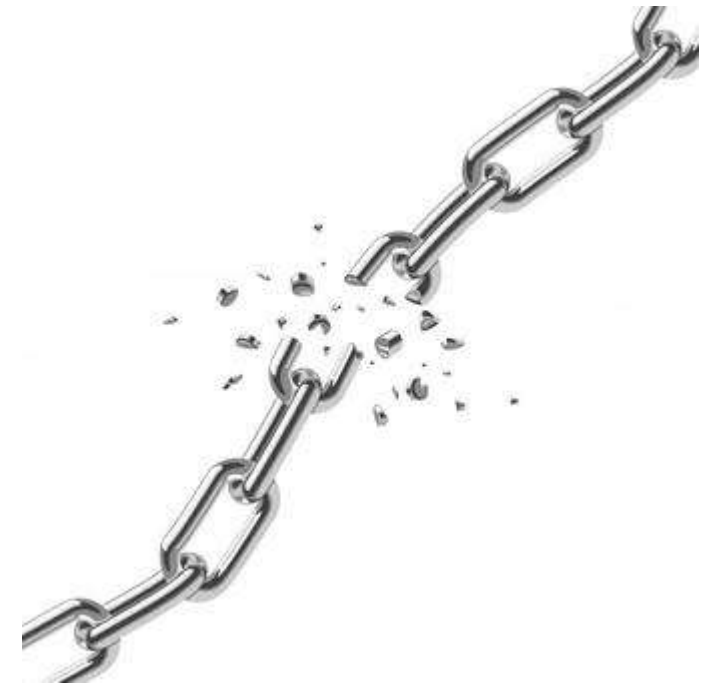


- A dedicated person shall organize and control

- EVERYBODY is responsible for biosecurity

- Aims need to be SMART

- Specific
- Measurable
- Achievable
- Relevant
- Time-Bound



- Information needs to be clear & understandable

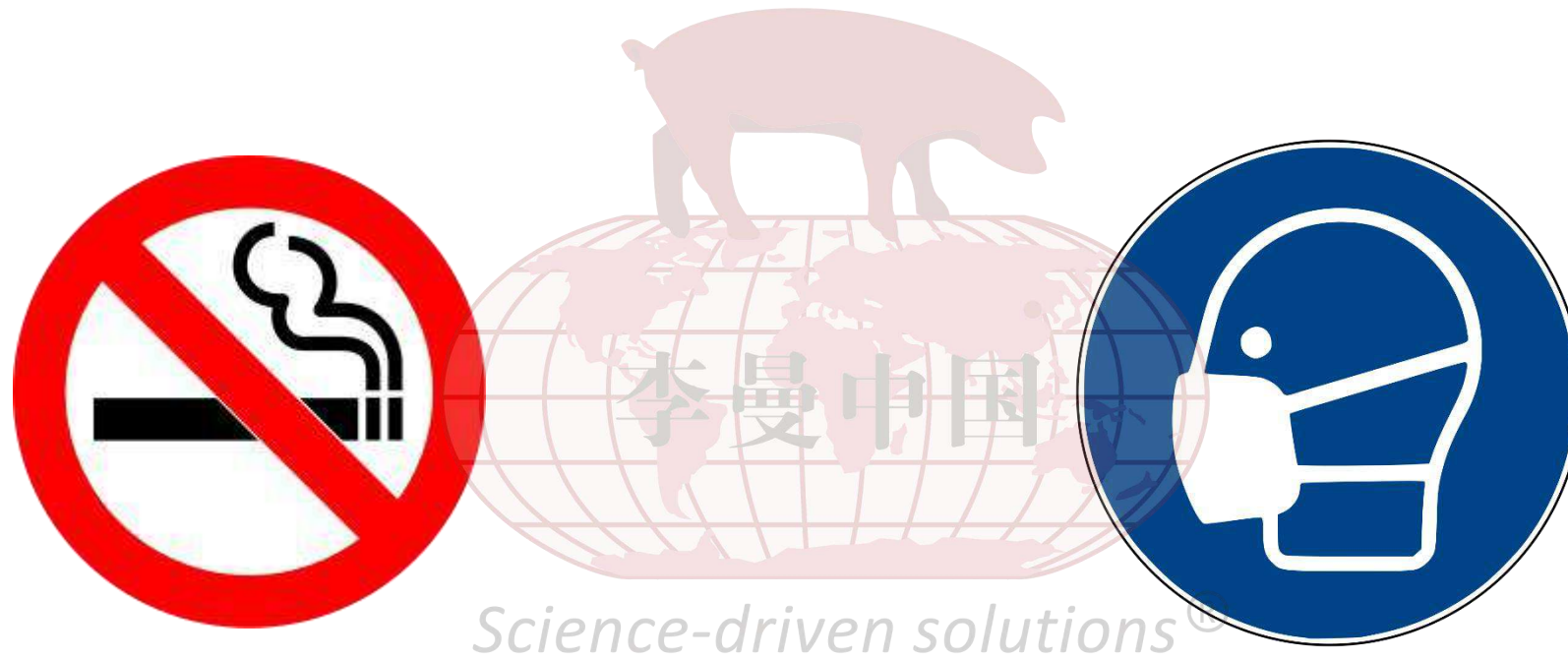


# Signs instead of words



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# Signs instead of words



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# Videos instead of long written SOPs



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# Is there 'best practice'? Yes & No!



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- Be creative



Source: 333corporate.com



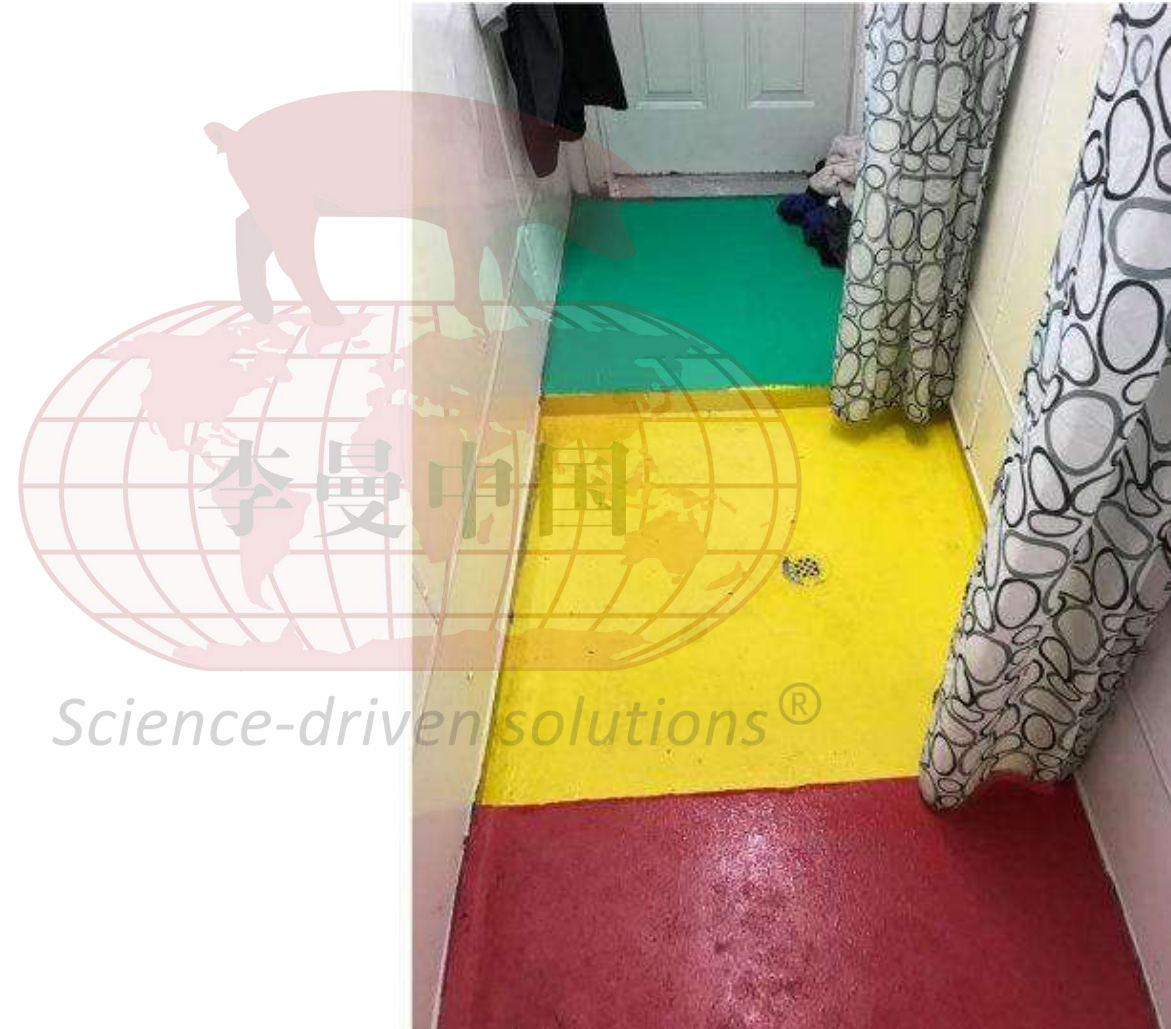
# Is there 'best practice'? Yes & No!



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- Be colorful



*Source: 333corporate.com*





# Is there 'best practice'? Yes & No!



- Educate
- Explain
- Reward!

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## World-Class Franchise Training Program

李曼中国

river so

Source: mcdonalds.com



Never blindly trust ...



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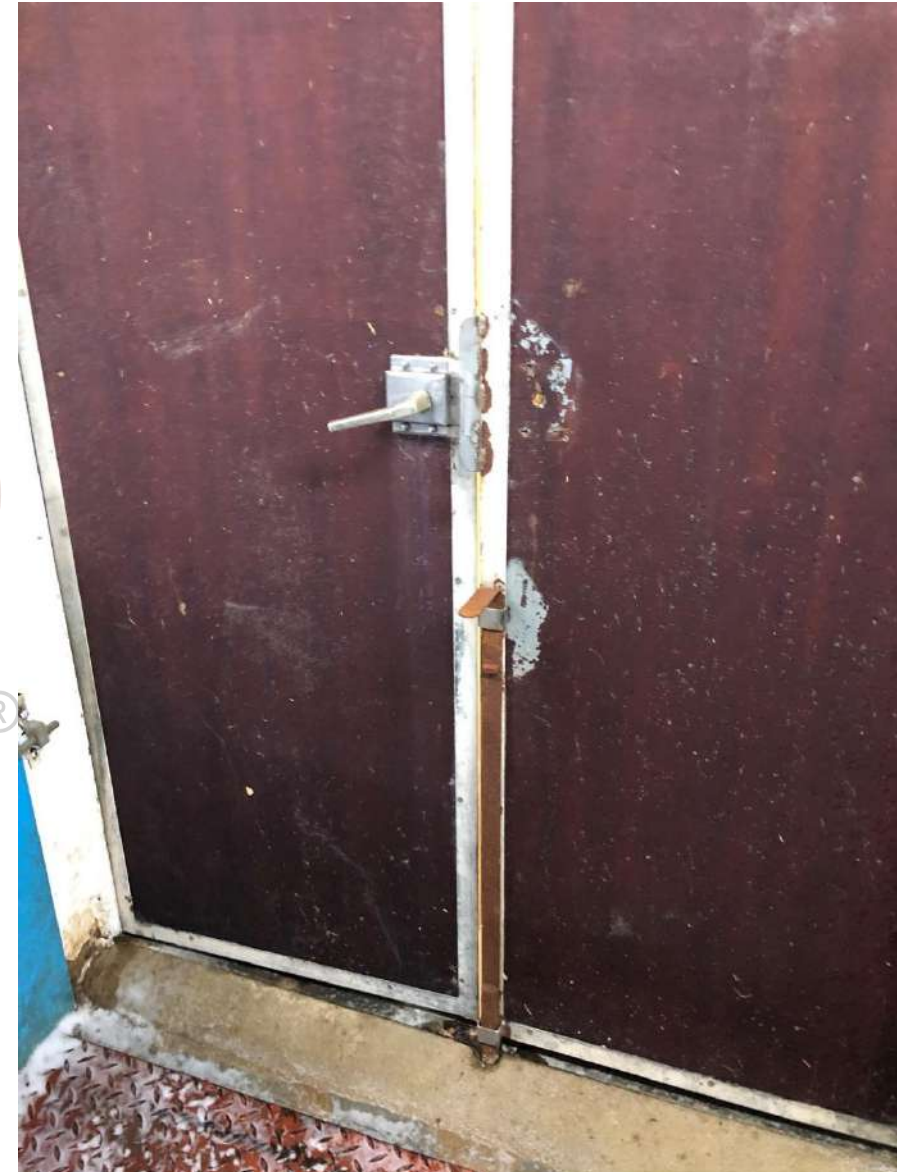


*«Please spray disinfectant on the walls.»*



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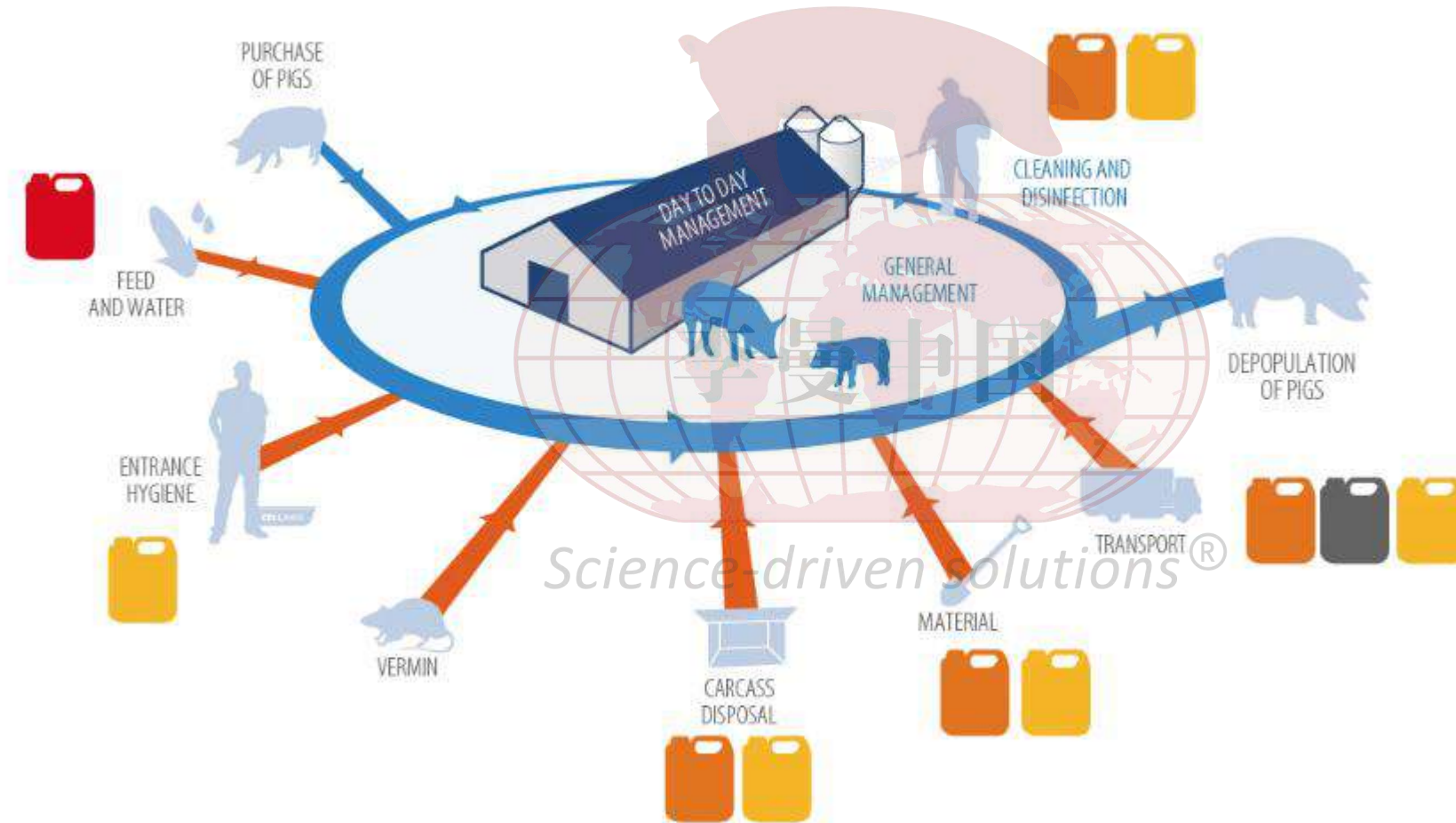


# «One size fits all» - A big misconception



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Source: CIDLINES.com



# Take home message



- There is no doubt about the importance of external & internal biosecurity
- There is plenty of information and material in the public domain. However, every biosecurity concept needs to be tailor-made, i.e. farm-specific!
- New technology supports the implementation, monitoring and improvement of biosecurity measures. However, all individuals need to understand and respect their importance!
- Every investment in biosecurity improvement is worth to be spend. However, in well running systems the payoff can only be seen by healthy animals and excellent KPIs!

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# Thank you very much for your attention!



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