



# Biosecurity & Vaccination

June 4<sup>th</sup> 2022

**alfa**  **chicks**  
suppliers of day old broilers



# Introduction



Boehringer  
Ingelheim

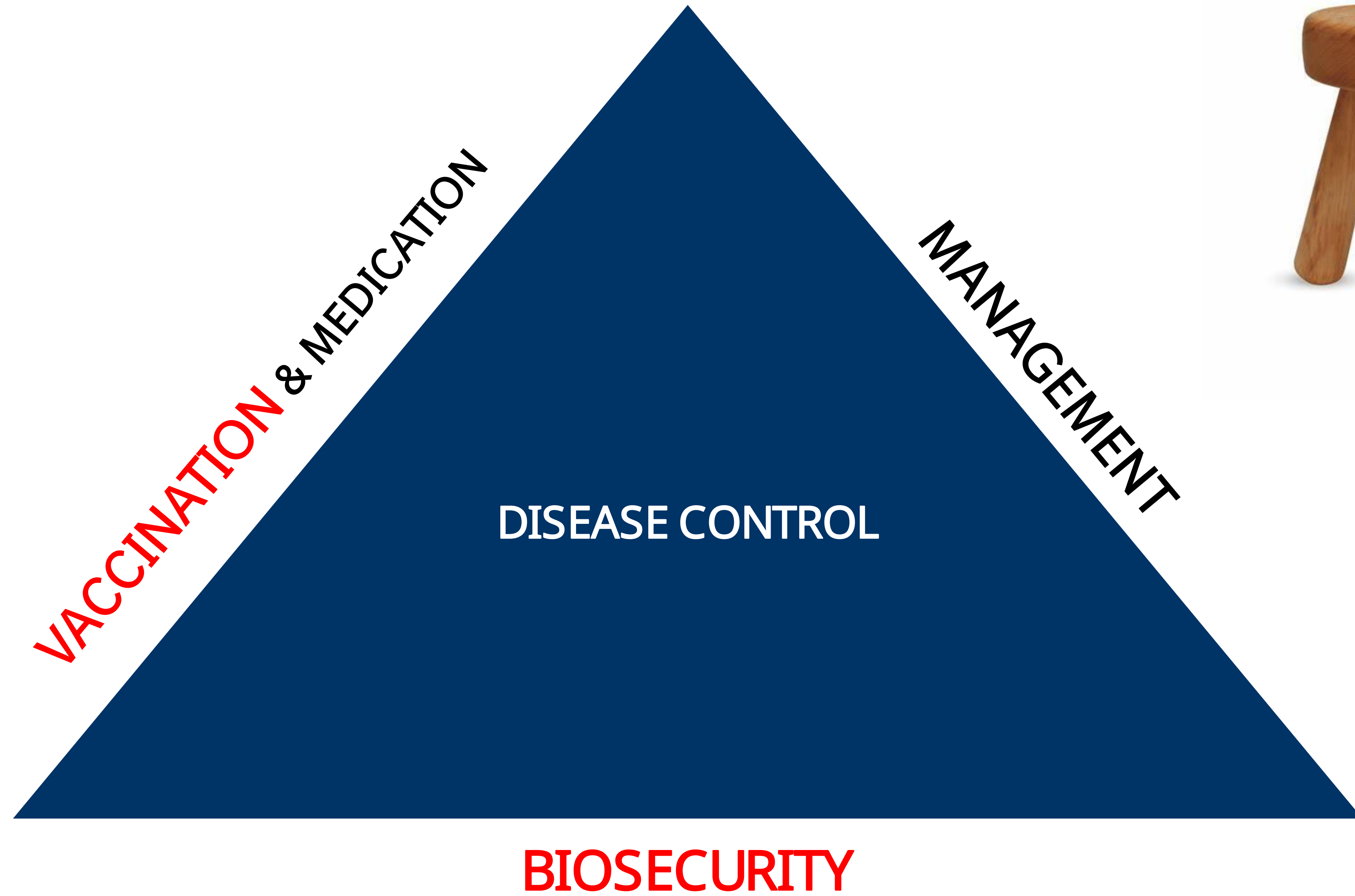




# Agenda

- Biosecurity
  - What is biosecurity?
  - Why is biosecurity important?
  - What can you do?
- Vaccination
  - Types of vaccines
  - Why do we vaccinate?
  - Correct handling of vaccines
  - Vaccine application methods
- Poultry diseases







Bio = Biological = Living  
organisms = Humans, animals,  
plants, bacteria, viruses, fungi

Security = protection from harm

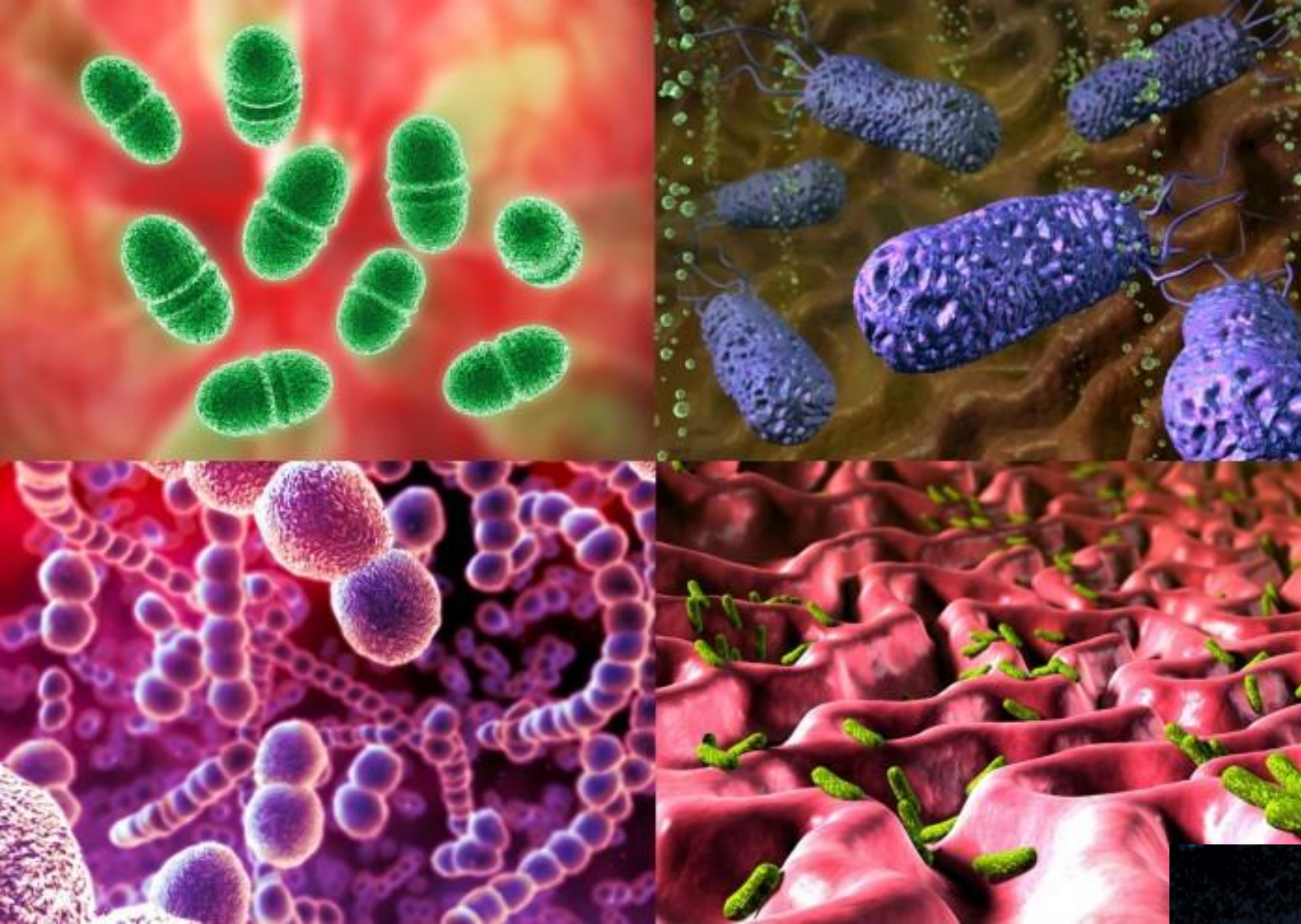
# Biosecurity

...creating a biological barrier

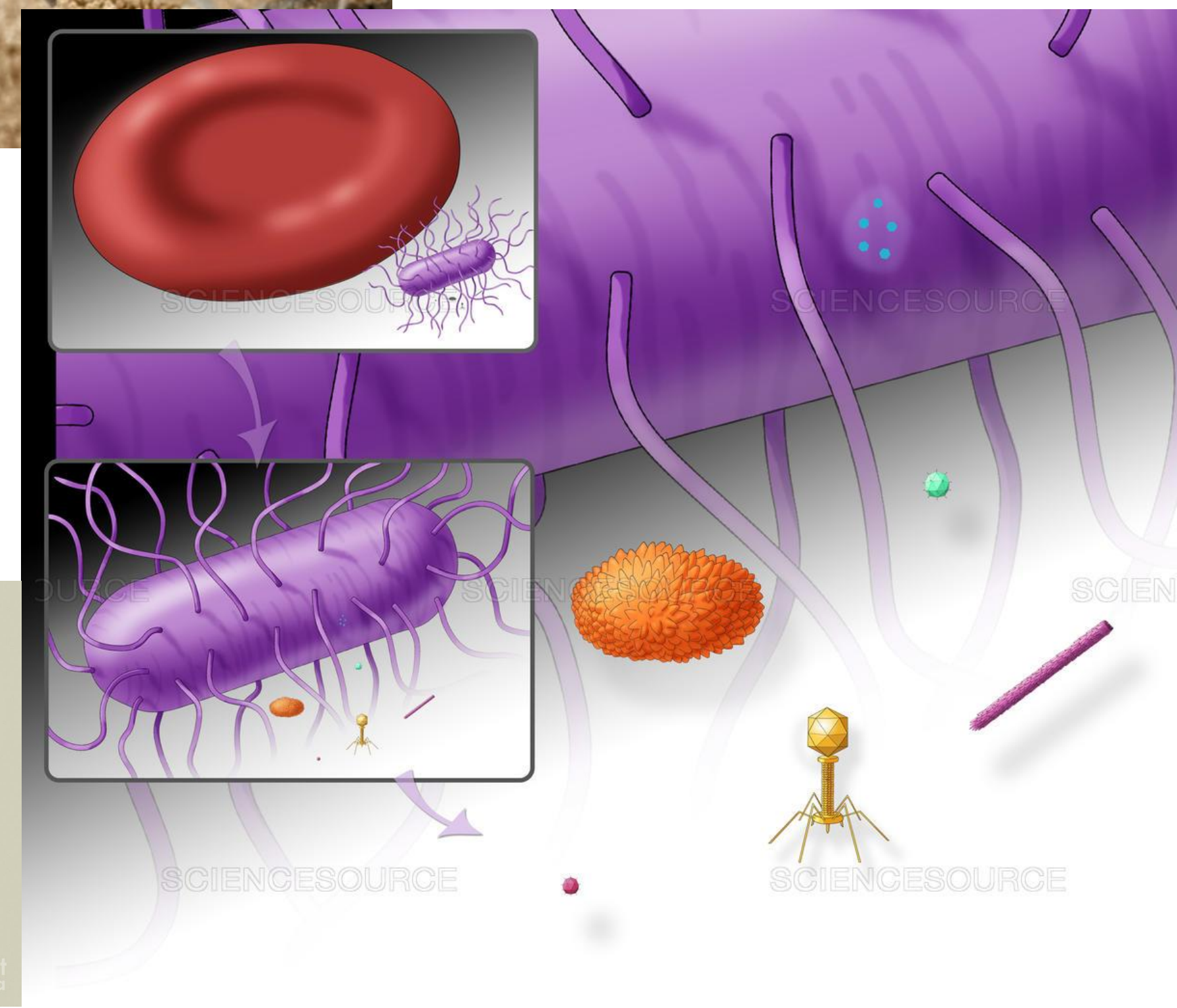
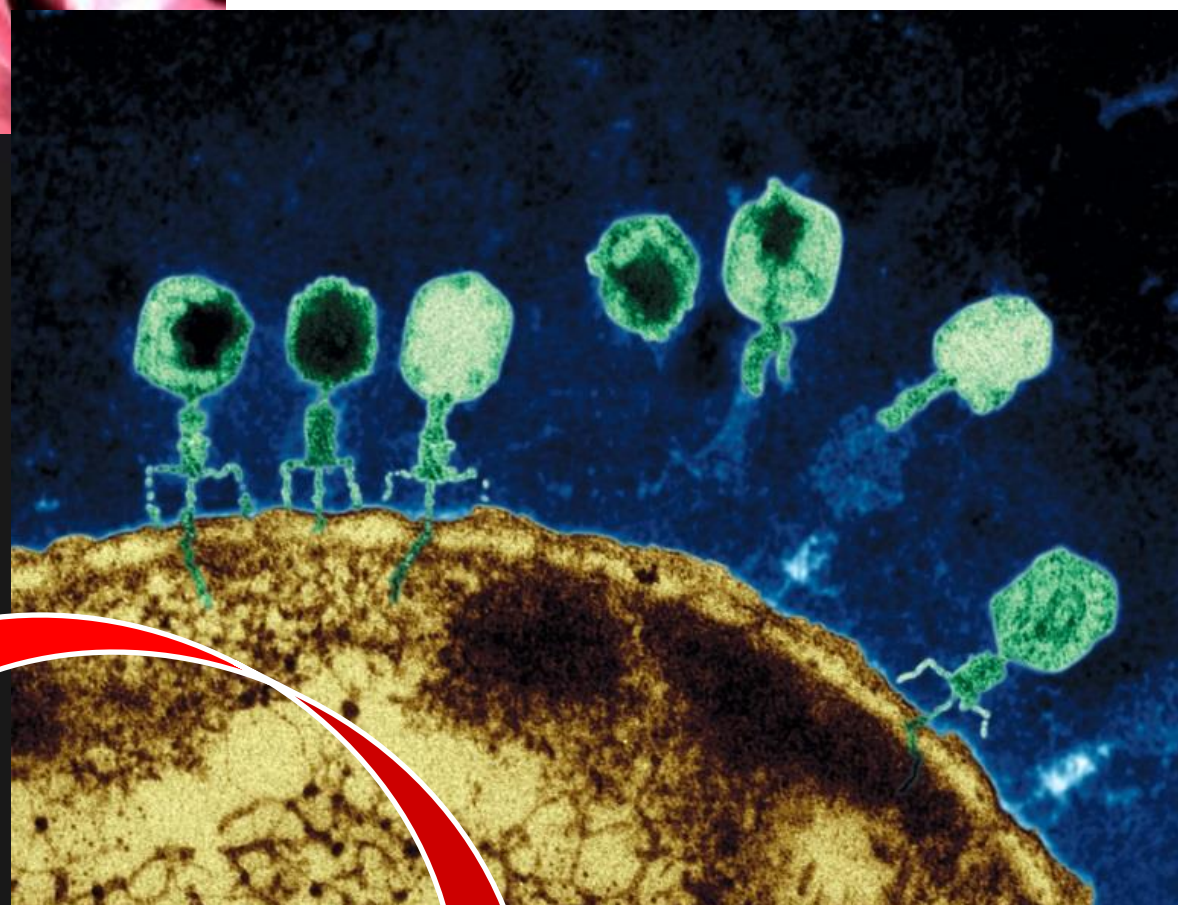
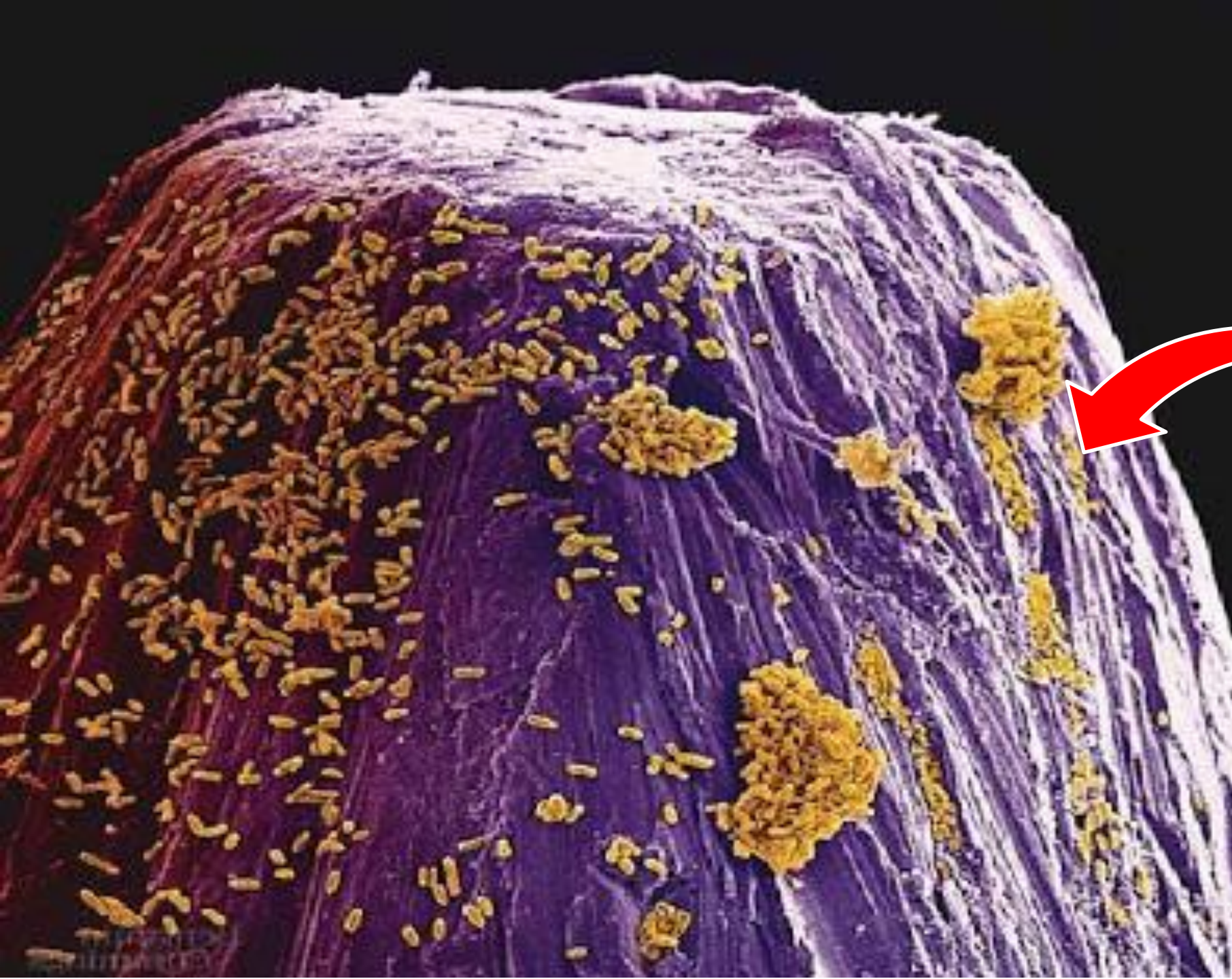


... a set of programs and procedures that will  
prevent or limit the build up and spread of harmful  
microorganisms and pests in and between poultry  
houses, poultry farms and poultry production areas





- Disease caused by micro-organisms - pathogens
- Create barrier to keep these out or at low levels
- Most commonly, micro-organisms are carried in by a host or an object - fomites







- Potential carriers / hosts:
  - Humans (same biosecurity rules must apply to all. No exceptions for friends / important visitors etc.)
  - Pets (dogs, cats etc.)
  - Other farm animals (cattle, sheep, goats, horses, donkeys, ducks, geese, chickens from a different source, etc.)
  - Wild animals (birds, feral cats etc.)
  - Pests (Rodents, flies, mosquitos, insects etc.)

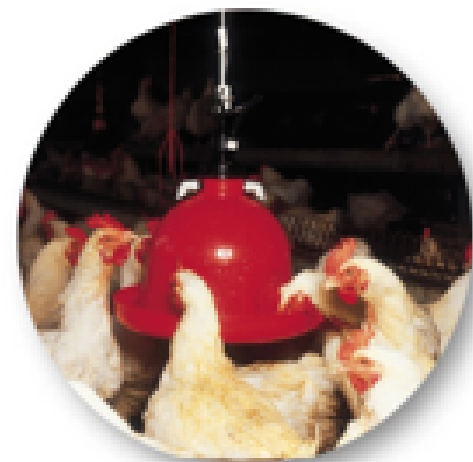




- Objects / environment:
  - Manure
  - Feathers
  - Vehicles
  - Equipment (tools, drinkers, feeders)
  - Tall grass, trees, standing water
  - Dirty boots / clothing







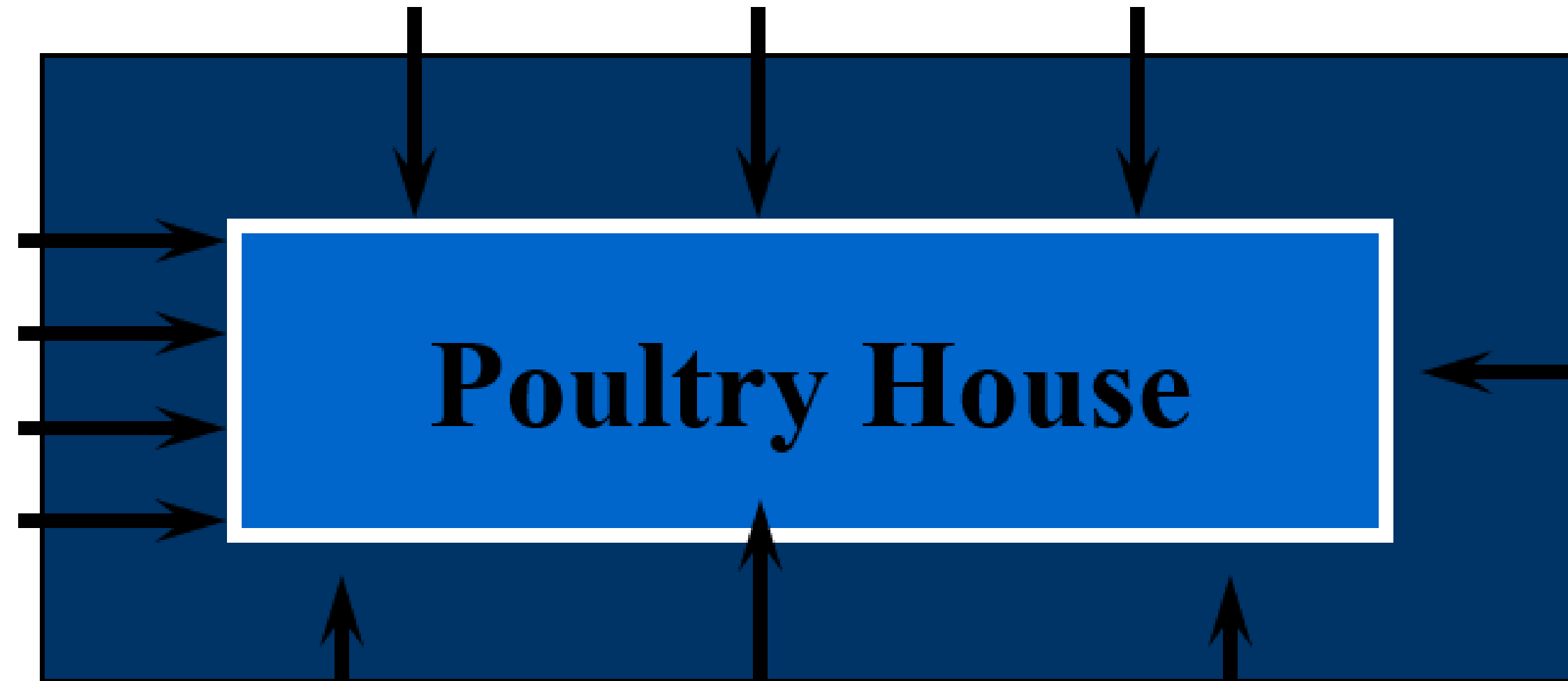
Water

Feed

Shavings/bedding



Wild birds  
Insects  
Rodents  
Equipment



**Poultry House**

Chickens from  
other sources



Humans



Housing



Vehicles





# So why is biosecurity important?

- Large number of animals in close proximity - rapid disease transmission by respiratory or faecal / oral routes
- Need to control pathogen entry to farm and contain organisms to individual houses on the one site
- Protect chickens from factors that influence their growth, performance and survival – financial impact on the farmer
- Protection of all staff/persons in contact with poultry from contracting and carrying disease-causing organisms
- Zoonotic diseases (same organism causing disease in animal and human)









Fences



Lock entrances



Avoid feed spillage



Keep out other animals



Ground maintenance



Clean Stores



Rodent control



Eliminate standing water



**Shower**



**Clean & Dedicated overalls & boots**



**Clean and Dedicated Equipment and Tools**



**Vehicle wash**





# Humans as carriers of micro-organisms

- Hair can carry micro-organisms for up to 21 days
- Fingernails can carry micro-organisms for up to 2 weeks
- Nostrils, eyes and mouth carry micro-organisms for up to 21 days
- Some disease causing organisms can be carried by humans internally...
  - Salmonella lives in the gut of humans and can be carried on hands

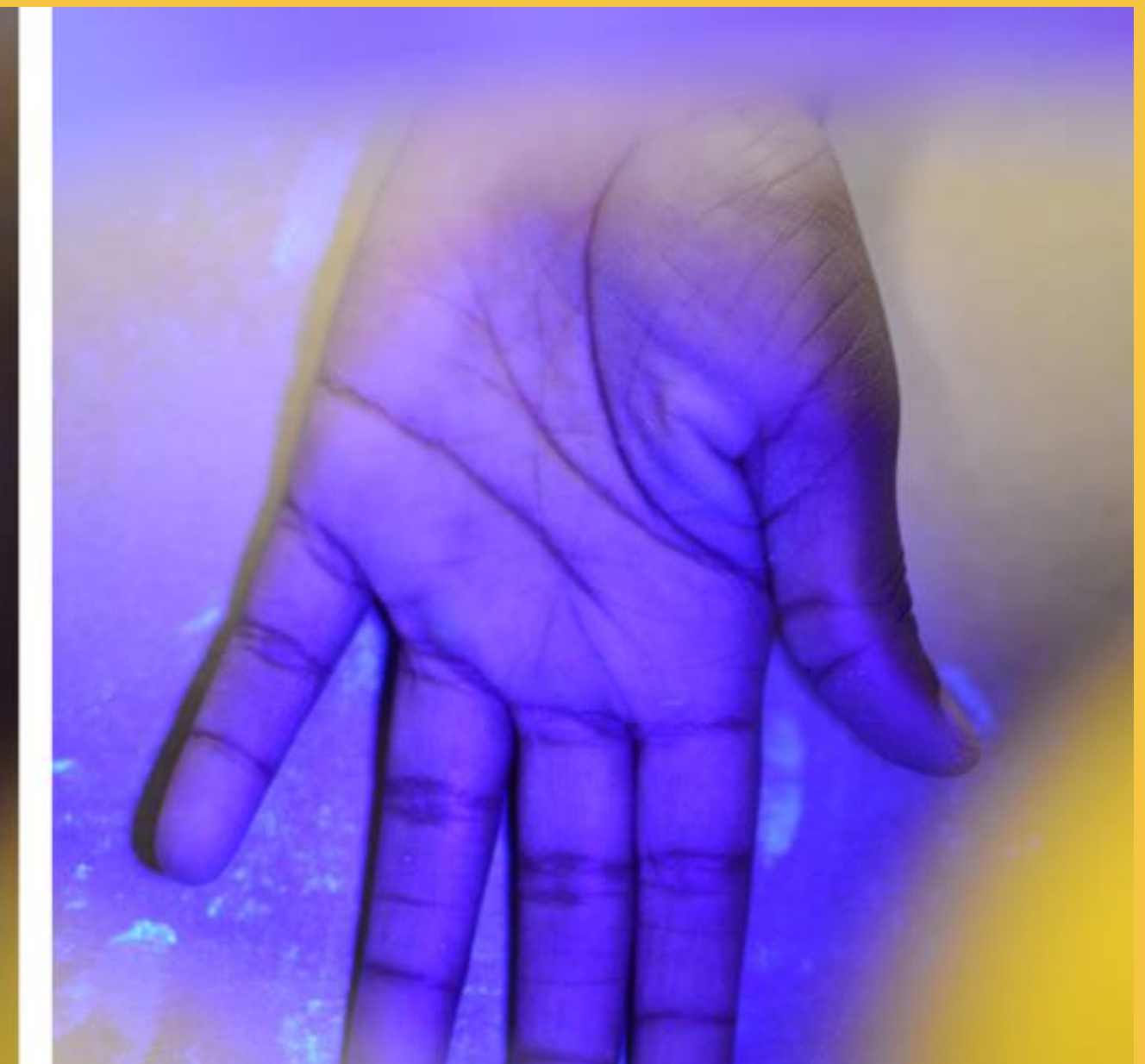


40 000 droplets  
containing 100 000  
micro-organisms.  
Travelling up to 8  
meters!

Must wash Hair!  
Nose! and Ears!

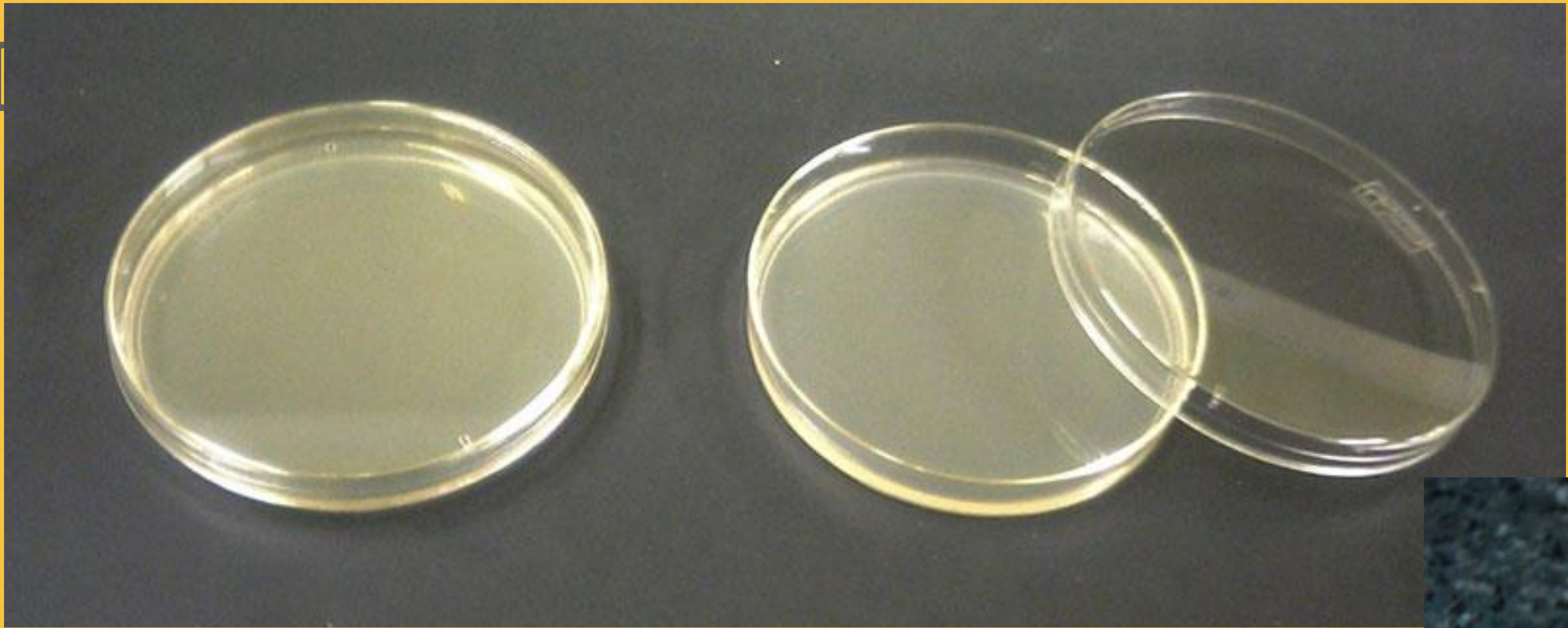


# Importance of hand washing















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# Importance of hand washing

	AFTER A VISIT TO THE TOILET	AFTER A VISIT TO THE PLAYGROUND	BEFORE MAKING BREAKFAST	AFTER ORDERING TAKEAWAY	AFTER A SNEEZE INTO THE HANDS
BEFORE WASHING HANDS					
AFTER WASHING HANDS					

JASON HQ



# How to wash hands properly





# Cleaning and disinfection of chicken house / cage



ALL EQUIPMENT ON  
SITE MUST BE CLEANED  
AND DISINFECTED  
AFTER EACH CYCLE



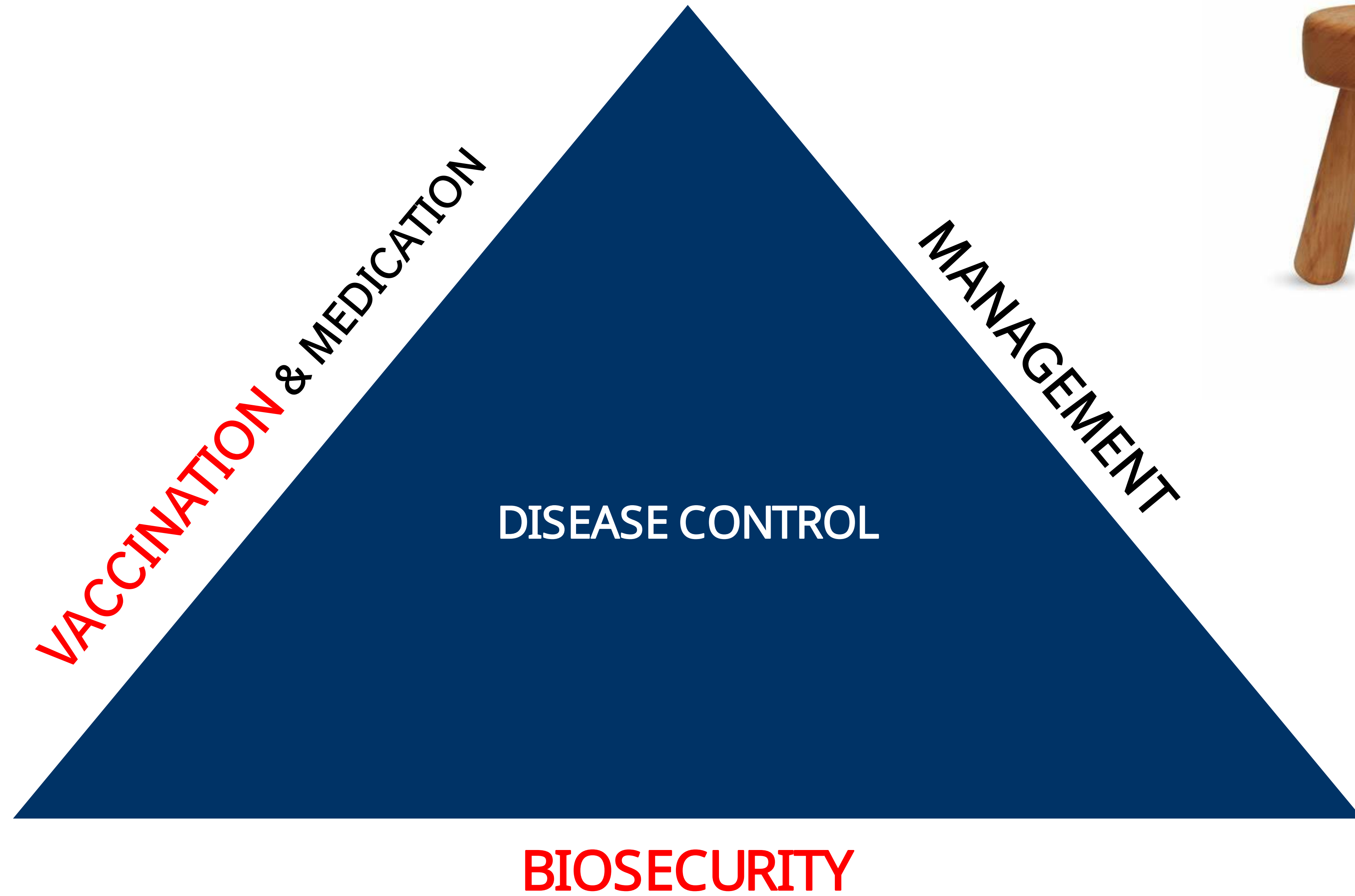
**Biosecurity is a critical aspect of sustainable  
and profitable poultry production**

# Biosecurity

**...is the best insurance policy against  
disease outbreaks**

**Biosecurity is essential in all poultry  
enterprises, regardless of status or  
level in the production pyramid**







# Vaccination

Objective: to reduce the impact of disease should biosecurity fail.

Vaccination **is not** biosecurity and does not replace a solid biosecurity program.



# Types of Vaccines

- Live vaccines
  - mass application easy (water / spray)
  - rapid immune response, short lived immune response
- Killed vaccines – mainly long lived birds
  - slow response
  - individual application
- Vector / Immune complex vaccines
  - individual application (hatchery injection / in ovo)
  - Safer and more reliable









# What is a Vaccine?

What is in this bottle???

- It is not a medicine
- It is a biological product made up of live viruses / bacteria

**So there are live micro-organisms in the bottle!!**



# Why do we vaccinate?

- Why are we giving live viruses to the chickens??
- We want to stimulate their immune system to produce antibodies (disease fighter cells) against a specific disease.
- When the chicken is challenged with disease later on, it already has antibodies ('memory') to fight the disease and can respond much quicker.
- Don't these live viruses cause disease?
- They have been attenuated (modified or changed), but are still very similar to the actual disease-causing virus.



# How vaccines work

- They mimic natural infection, so that same defence mechanisms as for the 'real' pathogen are operational and control the infection quickly
- Vaccines prevent clinical signs
- **Do not prevent disease challenge to the birds.**
  - When a challenge occurs, the immune system is already primed and reacts quickly



# Correct handling of Live Vaccines

- To stimulate the immune system effectively, the virus needs to replicate inside the chicken.
- The vaccination will only be successful if the virus is alive when it reaches the bird.
- Dead virus will not cause any immune response.



# Correct handling of Live Vaccines

- How do we keep the virus alive??
  - Keep at correct temperature at all times.
  - Make sure nothing comes into contact with the vaccine that can harm/kill the viruses.
  - Use within two hours after mixing



# Storage Temperature

- Vaccine should be kept at 2-8°C at all times from manufacturing until the start of the vaccination process – COLD CHAIN
- Fridges with thermometers and cooler boxes with ice packs are important.
- Should never be frozen! – Kills the live organisms
  - Prevent vaccine vials to come into direct contact with ice packs.
- Water temperature no more than 20°C when mixing vaccine



# Harmful substances

- Heavy metals – Use plastic containers and utensils
- Disinfectants
- Chlorine
- Antibiotics (medicine)
- Sunlight
- Organic matter (litter, feed etc.) – Important to use clean equipment
- System need to be flushed properly before vaccination to ensure lines are clean.
- Use stabiliser to remove harmful substances from water
  - the stabiliser always must be mixed with the water before the vaccine is added.



# REMEMBER!



- Use mixed vaccine within

**2 Hours**



# Vaccine application methods

- Drinking water
  - Water quality and temperature can influence live vaccines
- Spray
  - Preferred route for respiratory vaccines (local immunity)
  - Temperature, humidity, ventilation all play a role – bear these in mind!
- Eye drop
  - Mostly for respiratory vaccines at hatchery
- Injection IM/SC, mainly inactivated / killed vaccines
- Wing web stab (Fowl Pox)
- In ovo 18 day old hatching eggs (at transfer), into amniotic fluid, mass application, more effective and reliable



**Vaccination is a powerful and effective tool in prevention of disease and optimizing bird performance.**

# Vaccination

**Vaccination can only do so much... it is essential to also have good biosecurity practices in place!**

**Vaccine is only effective if it is handled and administered correctly, to ensure that live virus reach all birds on farm within a short time period.**



# Poultry Diseases caused by micro-organisms

## !! Newcastle Disease

- Infectious Bronchitis
- Infectious Bursal Disease (IBD or Gumboro)
- TRT / ART
- Marek's Disease
- ORT

- Coccidiosis
- Avian encephalomyelitis
- Inclusion body hepatitis
- Fowl Pox
- Mycoplasmosis
- Aspergillosis

## !! Salmonellosis

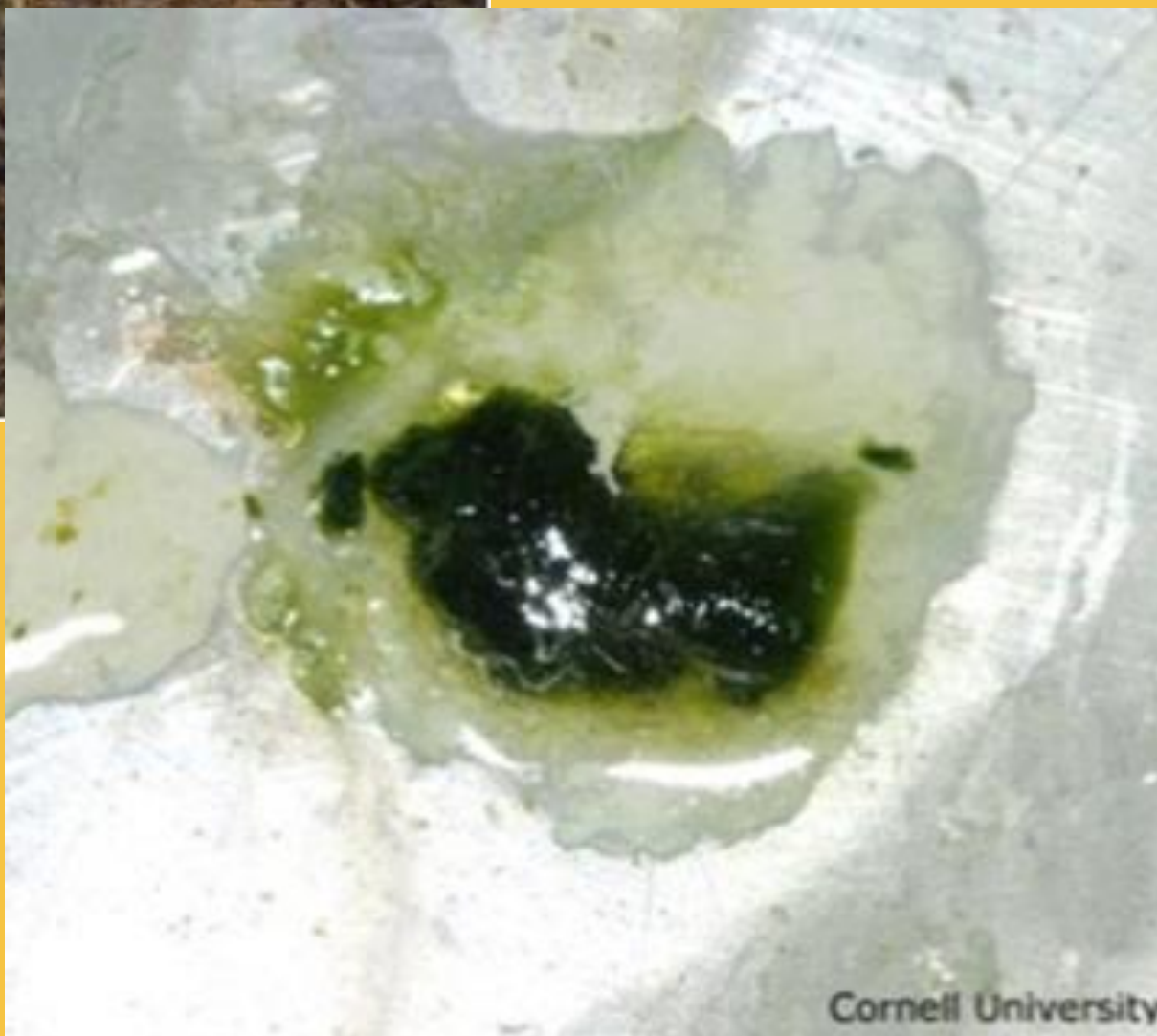
## !! Avian Influenza

- Colibacillosis
- Infectious Coryza
- Egg drop syndrome
- Reo virus infection
- ETC...

<u>Underlined</u>	<u>Most important diseases in broilers (short lived)</u>
Red	State notifiable diseases
!!	Zoonotic diseases (can infect humans)



**Newcastle disease**  
**Clinical signs and symptoms**





**Newcastle disease**  
**Clinical signs and symptoms**



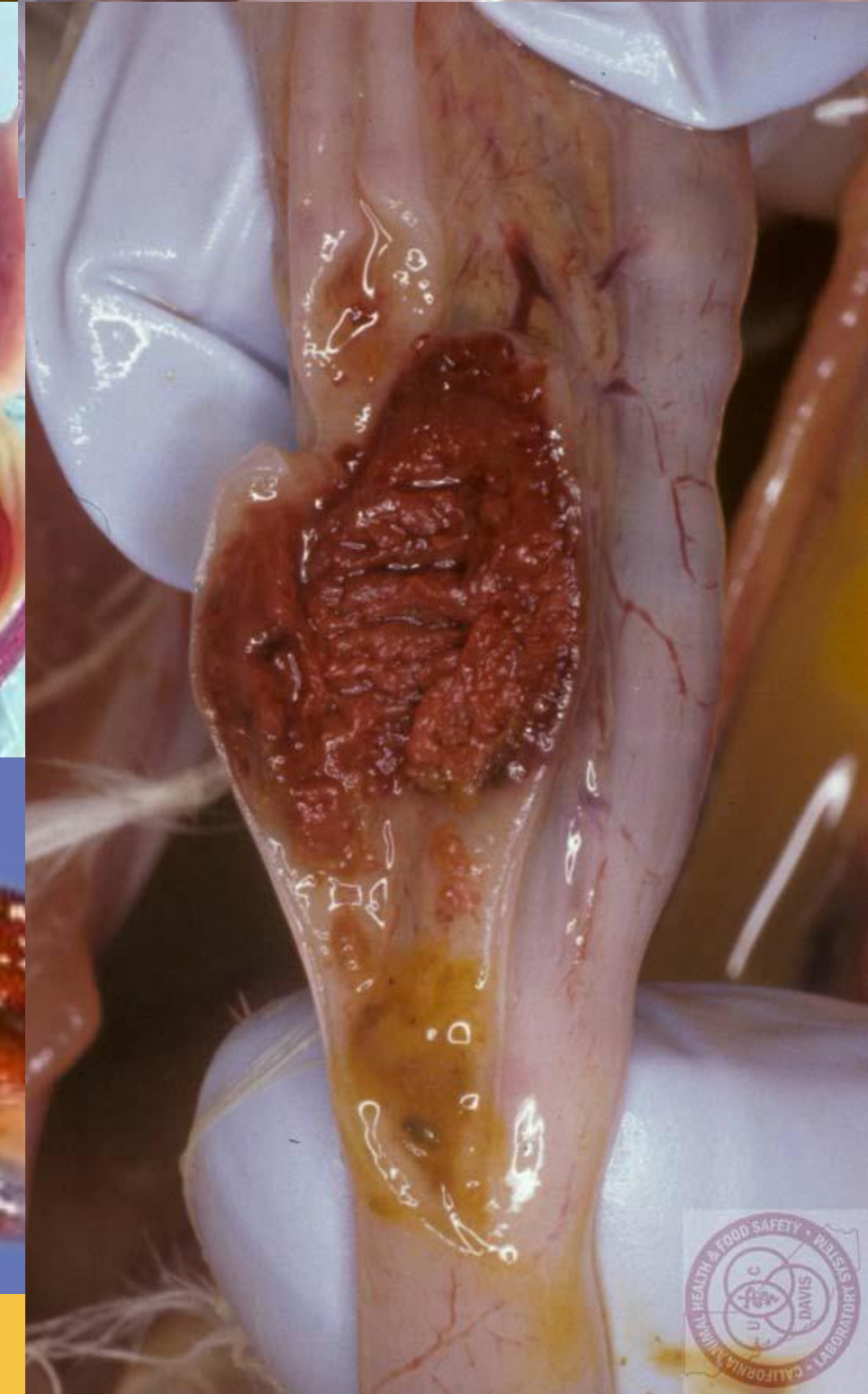
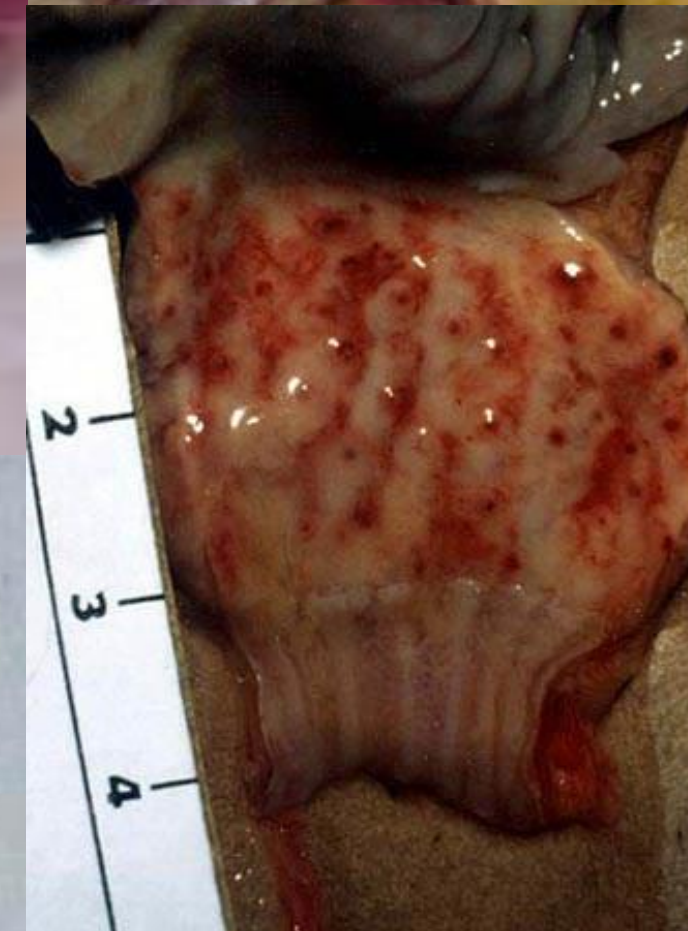
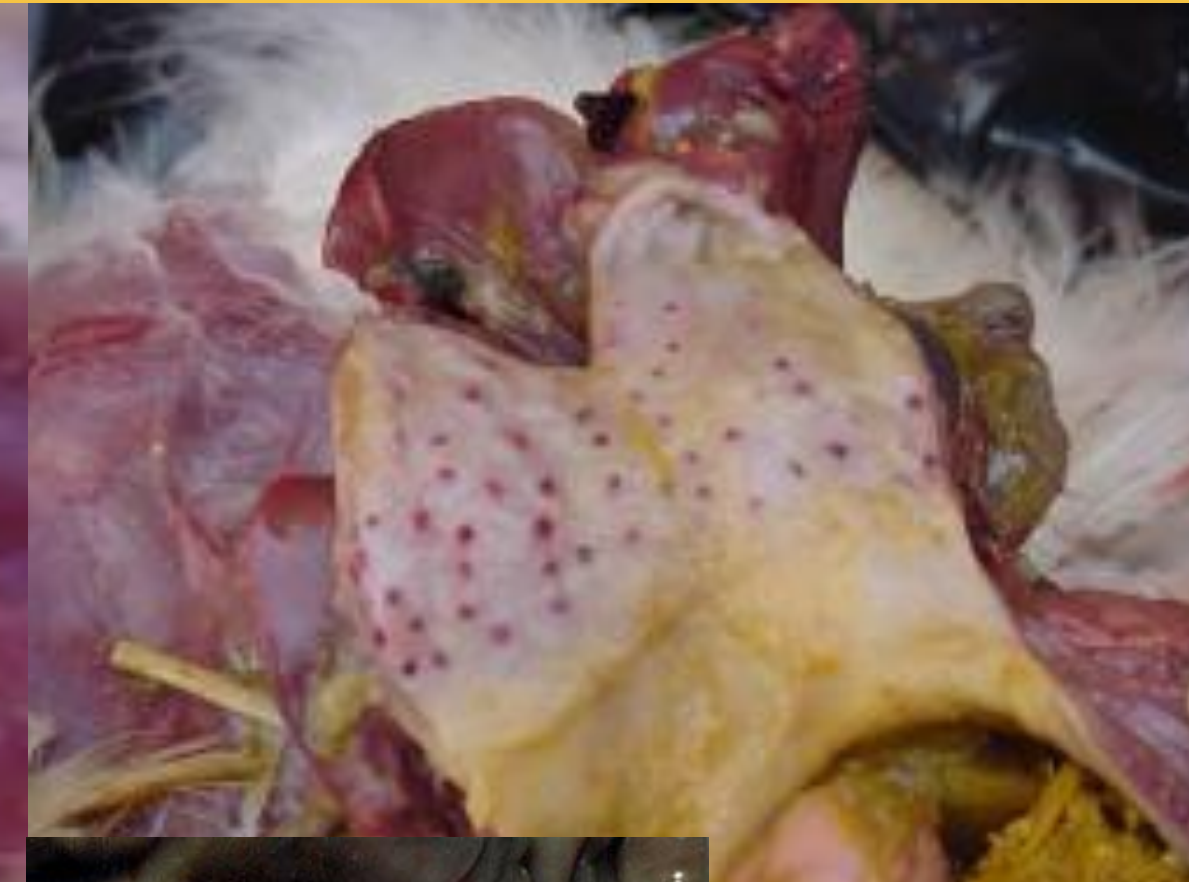


**Newcastle disease**  
**Is a zoonotic disease!**



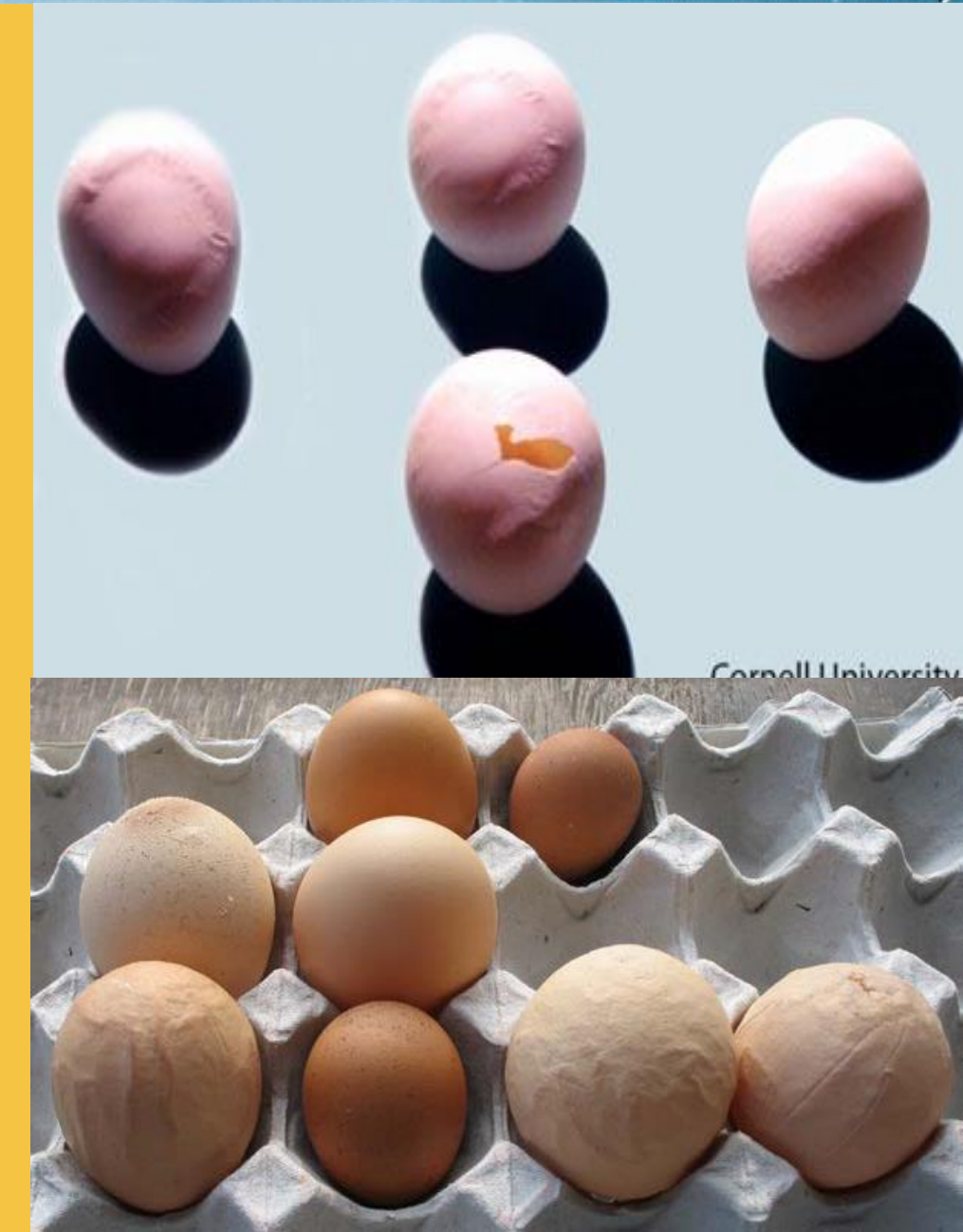


# Newcastle disease Lesions – post mortem





# Infectious bronchitis (IB, IBV) clinical signs and symptoms





**Infectious bronchitis (IB, IBV)**  
**lesions – post mortem**





**Infectious bursal disease (Ibd, gumboro)**  
**clinical signs and symptoms**



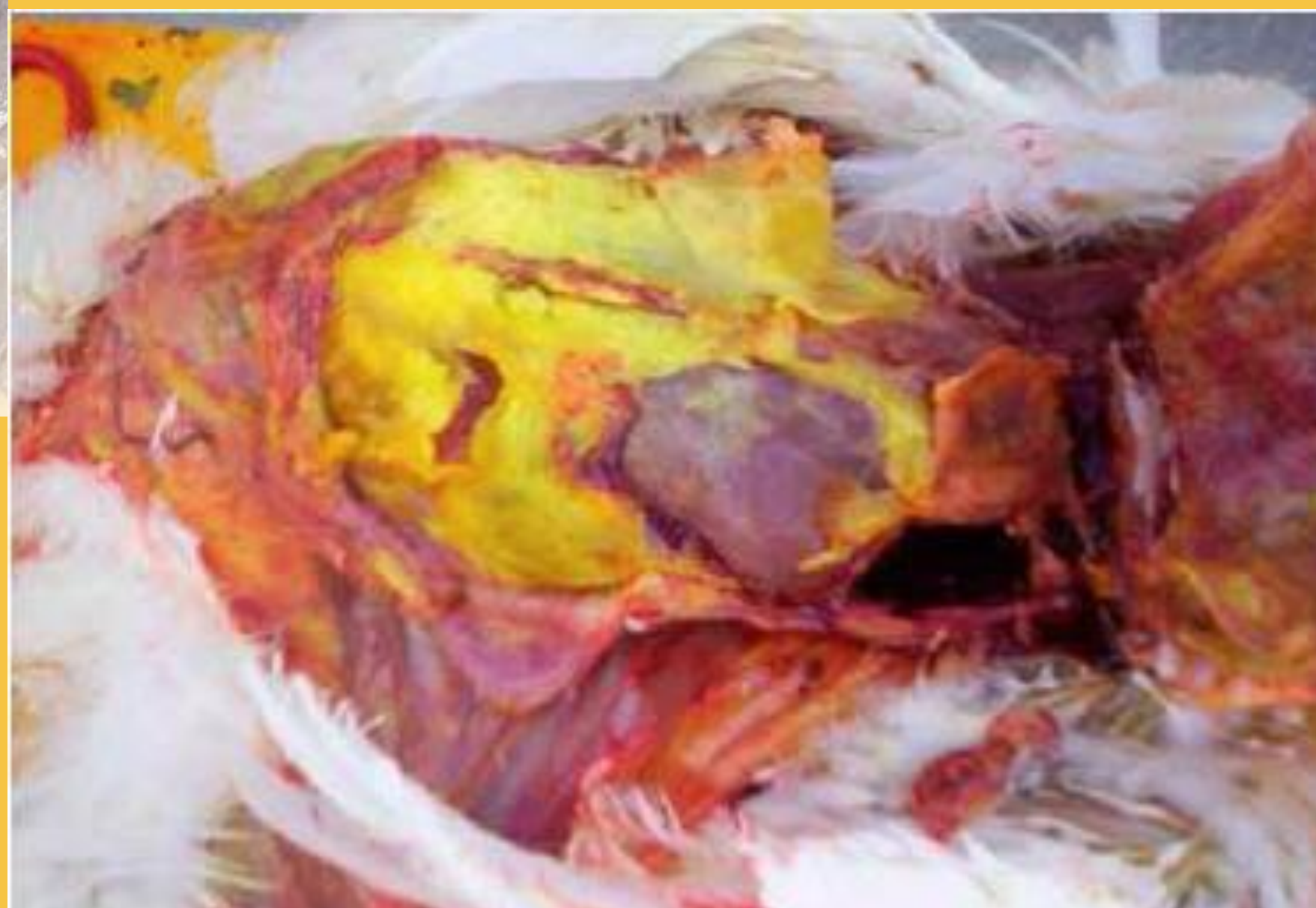
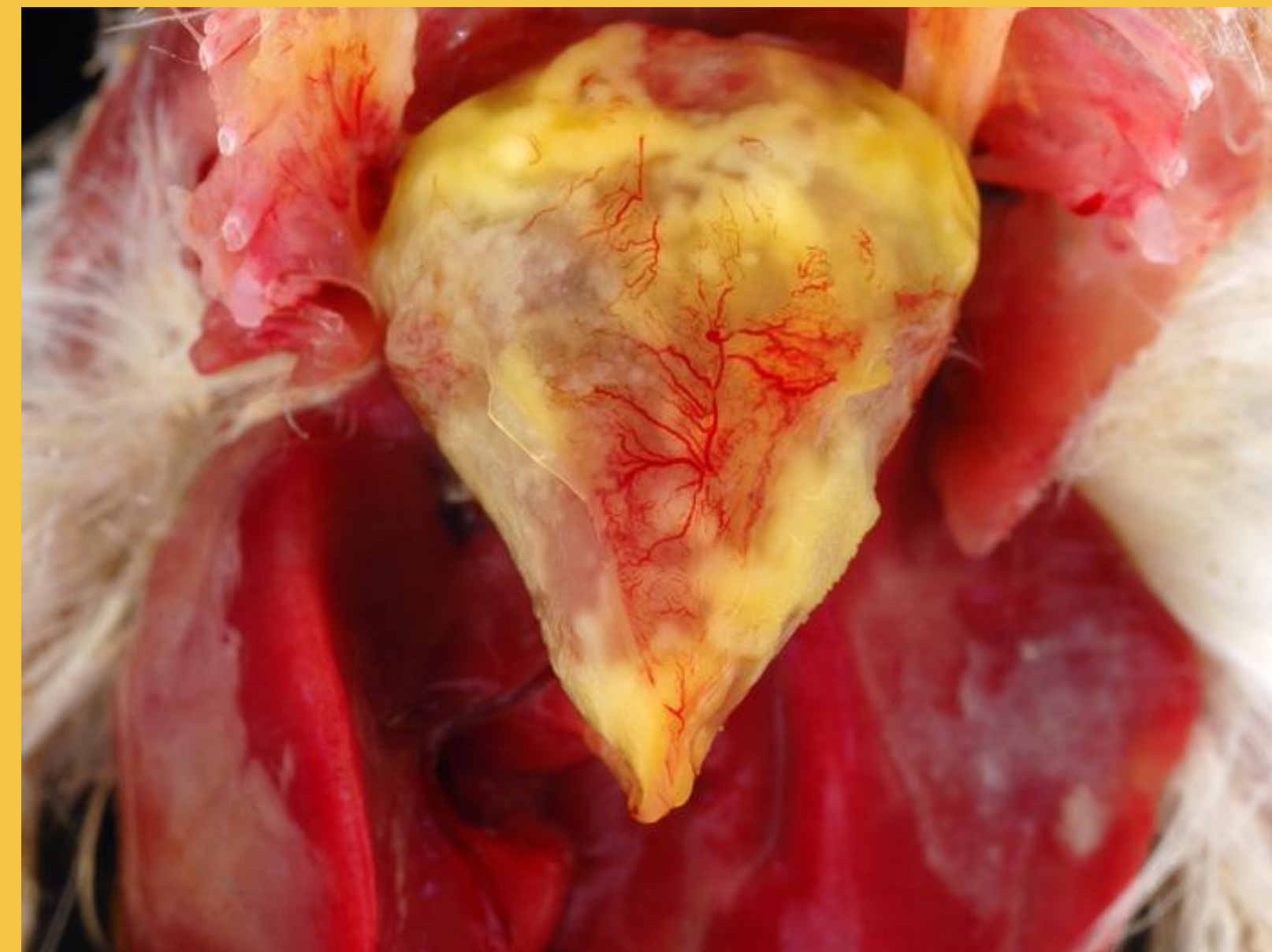


**Infectious bursal disease (Ibd, gumboro)**  
**lesions – post mortem**



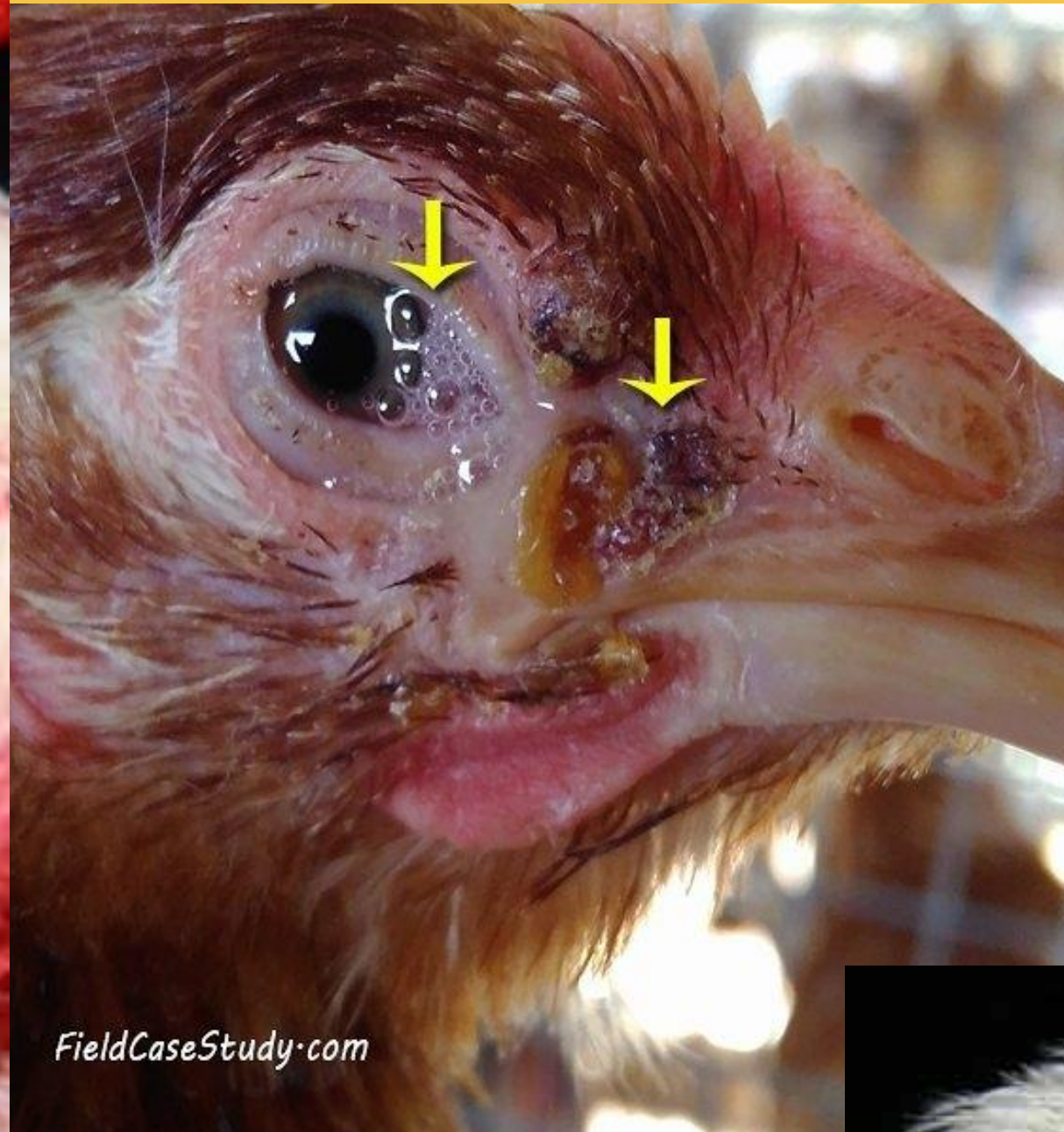


## Infectious bursal disease (Ibd, gumboro) Lesions – post mortem





**Fowl pox (FP)**  
**clinical signs and symptoms**





# Important vaccines for broilers

## Standard program:

In Hatchery (Day 0)	Newcastle Disease Infectious Bronchitis	Live vaccine	S pray
On Farm (Day 10-14)	Newcastle Disease Infectious Bursal Disease	Live Vaccines	ND: Spray OR Drinking water IBD: Drinking water
On Farm	Repeat Newcastle Disease vaccination every 2 to 3 weeks if birds are growing older than 35 days.	Live Vaccine	S pray OR Drinking water

## Using vectored vaccines in the hatchery:

- By using a vector vaccine, on farm vaccinations can be eliminated (IBD) or reduced (ND) as one injection will protect the bird for the rest of it's life.
- By reducing on farm vaccination, bird performance improves as there is less stress on the immune system.



**QUESTIONS?**

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