



**Blue 2024  
Economy**  
AQUACULTURE FORUM

**2024 • ABU DHABI**  
**#BEAF24**

# Fish Health and Vaccines: NETWORKING SESSION

Mouza 2, Floor P1  
20042024



# Networking Session

## Fish Health and Vaccines

Grant Hyatt, Abu Dhabi 190424

Global Business Development Director- Aqua, Markus Schrittwieser

# Markus Schrittwieser

Fish Health Specialist / Veterinarian- likes seafood 😊

- Veterinary degree from the University of Vienna with focus on Biotechnology and Ichthyology 2004
- Master in Aquatic Veterinary Science from the University of Stirling
- FTA for Fish

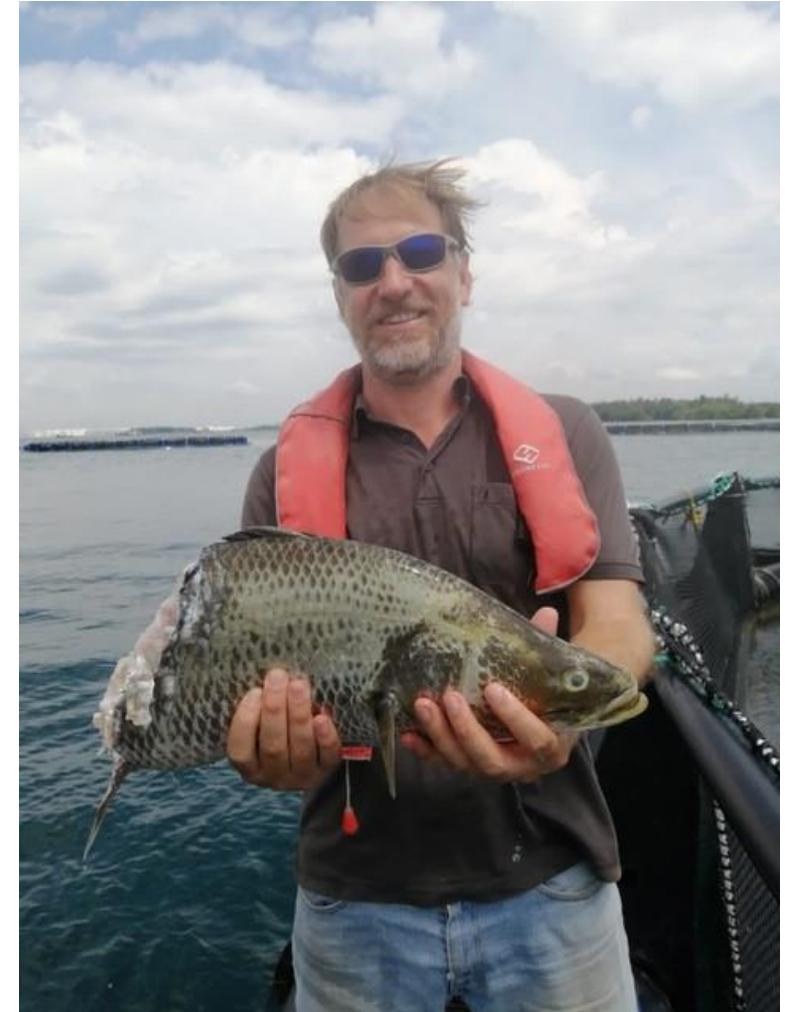
Over 15 years of experience in the aquaculture and veterinary industry across Europe, Asia, MEA and Australia:

Global Business Development Director Aqua –San Group

General Manager - UVAXX Pte Ltd

Chief Veterinary Officer – BG

Before that I was working in several roles in the veterinary and aqua industry, in Austria and Scotland.



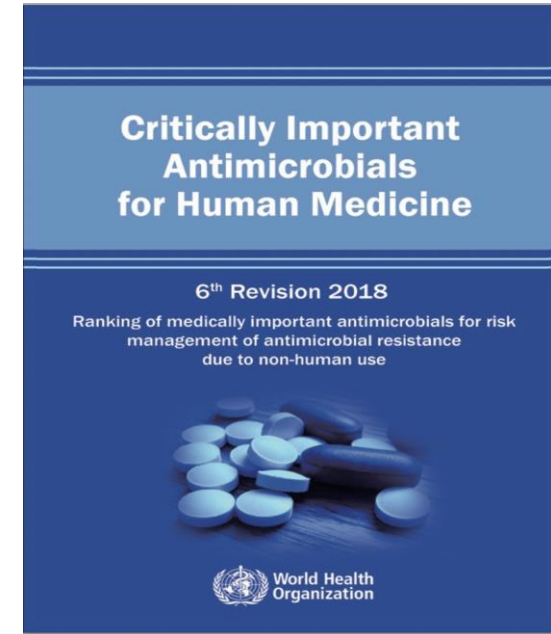
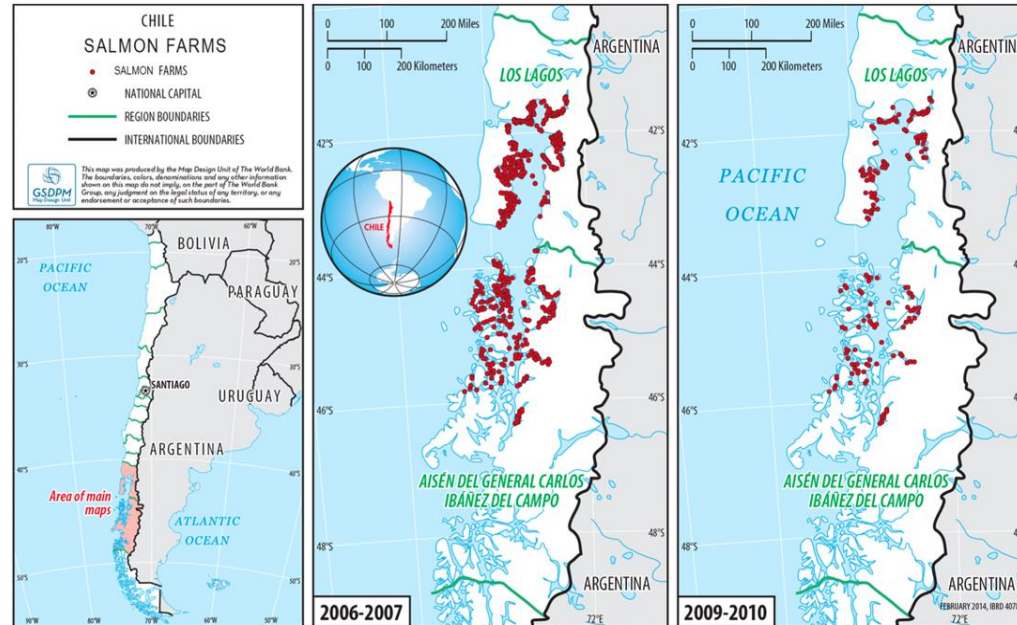
# Health Challenges in Aquaculture

We all sit in the same boat

Streptococcus

Viral outbreak - ISA Chile

AMR



# Fish health and welfare – consumers demand it!

Animal welfare plays increasingly important role in aquaculture  
Consumers want transparency!



WELFARE | SUSTAINABILITY | CONSUMER +13 more 11 January 2023, at 8:00am

## Stepping up tilapia welfare in China

Following the launch of a new tilapia welfare assessment programme in China, IQC's Conglong Li and Sisi Xie explain why they are working with FAI to raise awareness of its importance – both for ethical and economic reasons.



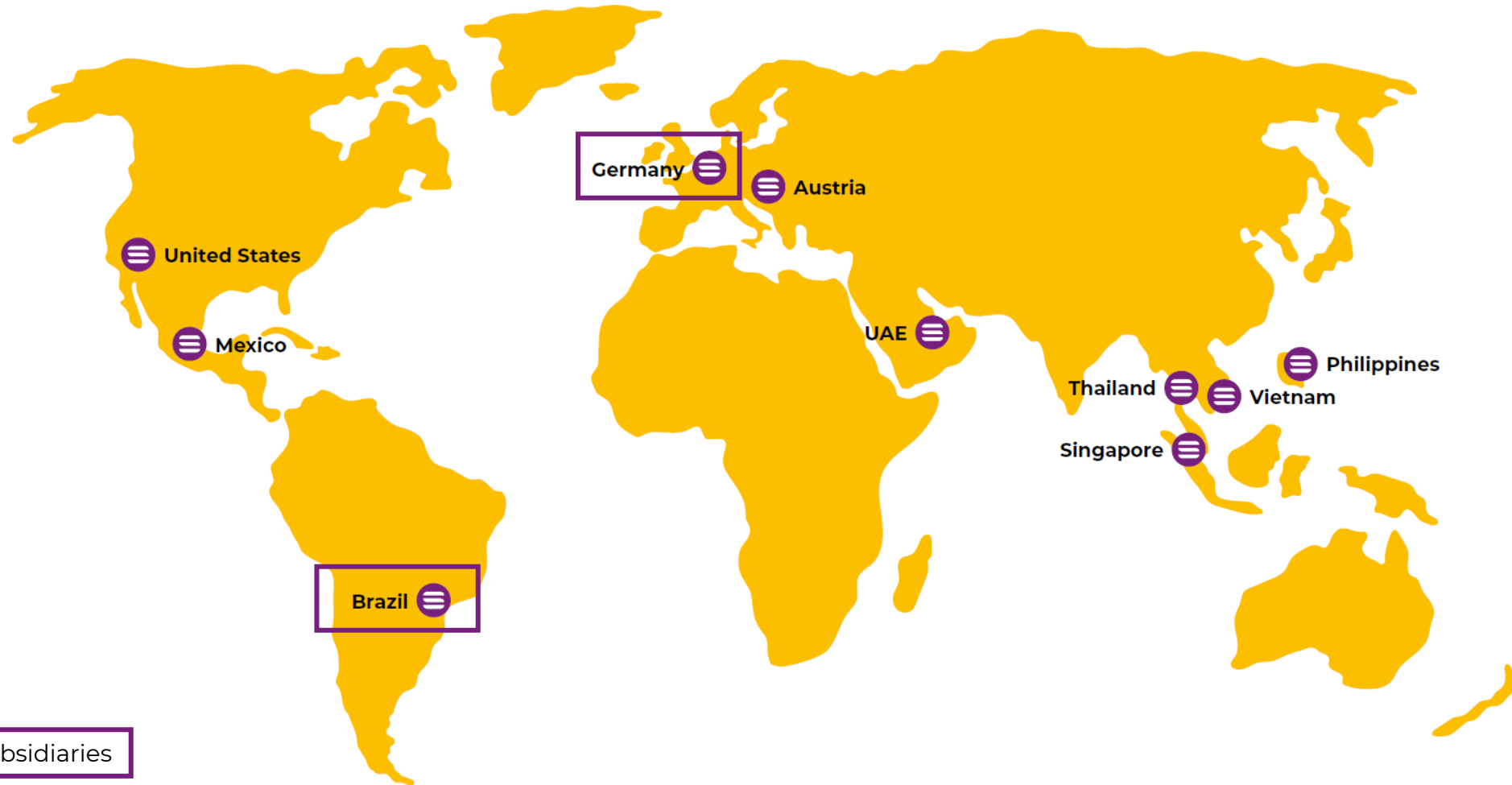
by Rob Fletcher  
Senior editor, The Fish Site

**Why are you currently focusing your attention on fish welfare in China?**



# SAN Vet - Global in Animal Health

Presence on 4 continents

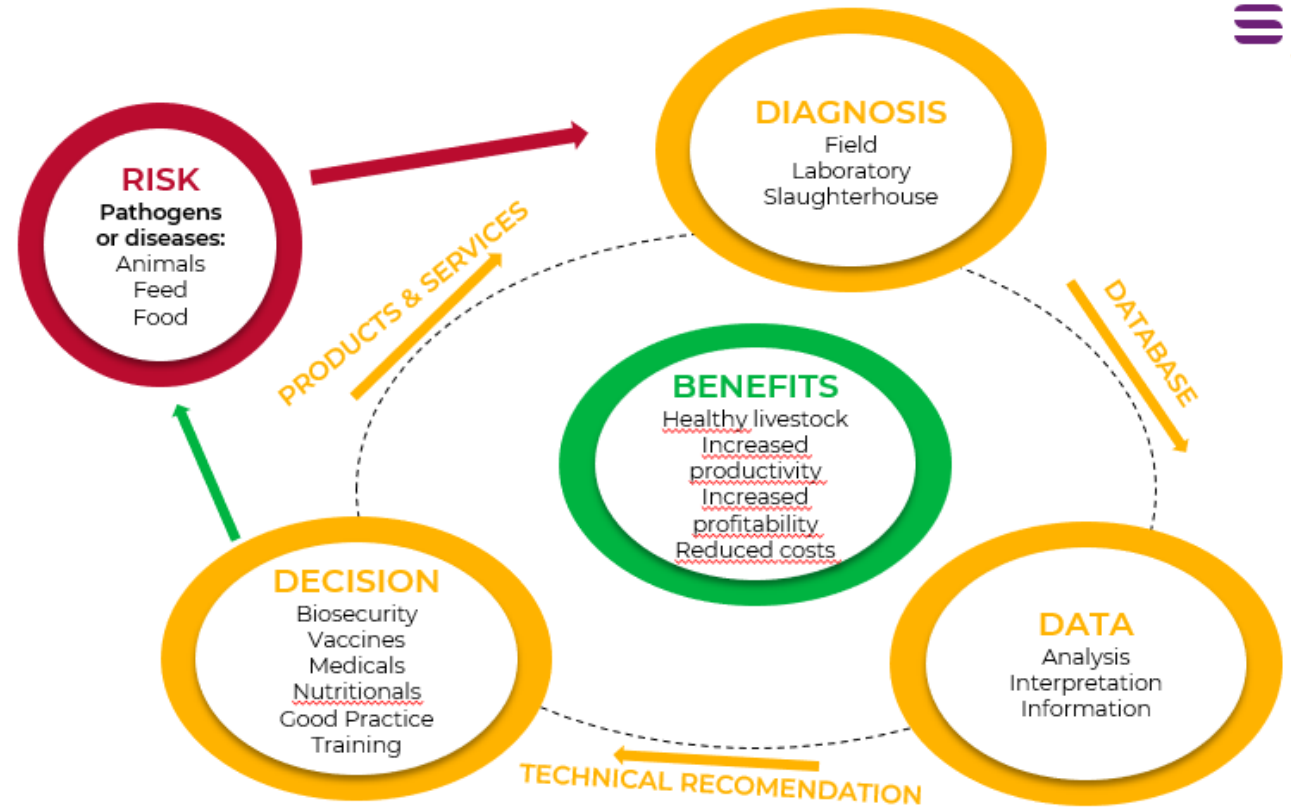


Main subsidiaries

# SAN VET- Value Proposition



- **Livestock-focused:**  
aquaculture, poultry, swine, ruminants
- **Complete diagnostic:**  
pathology, bacteriology,, cultural virology, PCR & sequencing, (serology)A
- **Products:**  
ANIVAC® -Autogenous vaccines  
Kylt® - in-vitro diagnostics,



# Global Business Unit SAN Vet

www.san-vet.com



## ANIVAC®



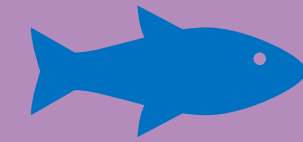
## ANICON®



## KYLT®



## SANPHAR®



## ANIMAL HEALTH

*Vaccines*

*Veterinary Diagnostics &  
Services*

*In-vitro PCR Diagnostic  
Products*

*Biosecurity & Medicals*



# ANICON: State-of-the-art diagnostics



Comprehensive, innovative, and fast veterinary diagnostics in a modern laboratory center in Germany



- Necropsy
- Microscopy
- Microbiology
- Molecular diagnostics
- In-vitro diagnostic qPCR (KYLT)
- NGS and Metagenomics for early detection of pathogens

Specialized veterinarians - competent partners for analytics and consultation.

# ANIVAC: Vaccine production factory, Hoeltinghausen (DE)

A global leader in autogenous vaccines



- Founded in 2005, in northwest Germany.
- Acquired by SAN Group in 2021.
- Experts in **Veterinary Diagnostics & Services** (ANICON) as well as **autogenous Vaccines** (ANIVAC).
- Highly specialized experts.
- The autogenous vaccine portfolio holds more than 50 bacterial and 15 viral antigens with all possible combinations.

**Definition: Inactivated** immunological veterinary medicinal products, manufactured from pathogens ( ) obtained from animals in an epidemiological unit(herd) for treatment of ( ) those animals in the **same epidemiological unit or** animals with confirmed **epidemiological link**.

# KYLT-IN-VITRO DIAGNOSTICS

- Founded as a trademark of ANICON, now a strategic business field of SAN Vet on its own
- Experts in **In-vitro PCR Diagnostic Products.**
- It offers a wide variety of High-end-Real-Time and conventional PCR systems. In vitro diagnostics are applicable in the areas of animal health, food and animal safety.



Tested Parameter	Method
Kylt® Edwardsiella ictaluri & piscicida	qPCR
Kylt® Flavobacterium columnare	qPCR
Kylt® Francisella orientalis	qPCR
Kylt® Infectious Pancreatic Necrosis Virus	RT-qPCR
Kylt® Infectious Salmon Anaemia Virus	RT-qPCR
Kylt® Koi Herpesvirus	qPCR
Kylt® Strep. agalactiae Serotype Ia, Ib, III	qPCR
Kylt® Streptococcus iniae	qPCR
Kylt® Viral Haemorrhagic Septicaemia Virus	RT-qPCR
Kylt® Viral Hematopoietic Necrosis Virus	RT-qPCR

# Diagnostic to Vaccines- Workflow



**Day 0:**  
Sample collection and pathomorphological report



**Day 1-3:**  
Results of bacteriological investigation

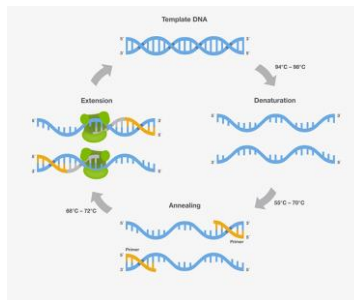


**Day 3-6:**  
Typing-/Characterisation qPCR results



**2-6 weeks:**  
Cultivation plus QC

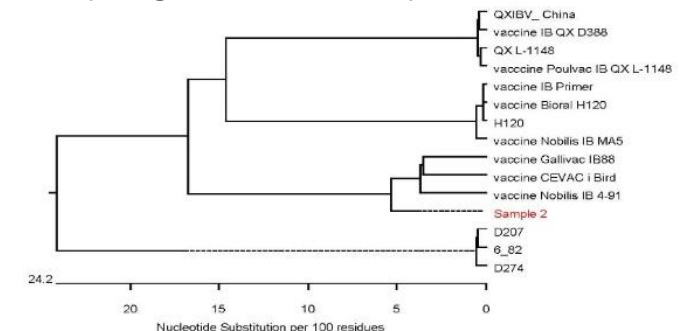
**Day 1:**  
RT-qPCR results



**Day 2-4:**  
Sensitivity test results



**1-2 weeks:**  
Sequencing/  
phylogenetic analysis



Everything starts.....with?



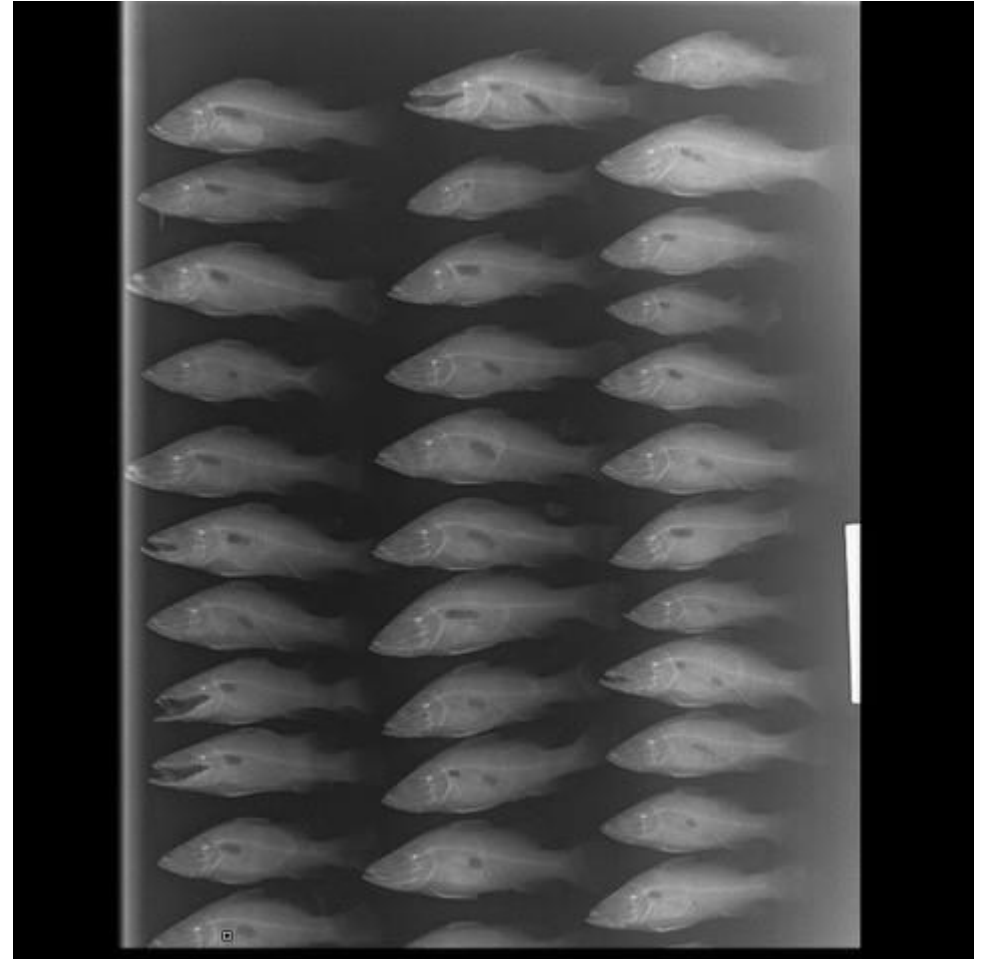
# Monitoring – Know your Baseline

Implementing continuous fish health monitoring

Take samples in good times to be prepared and understand baseline over all seasons

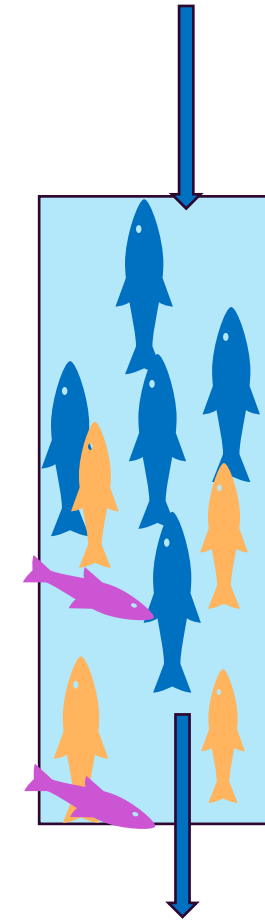
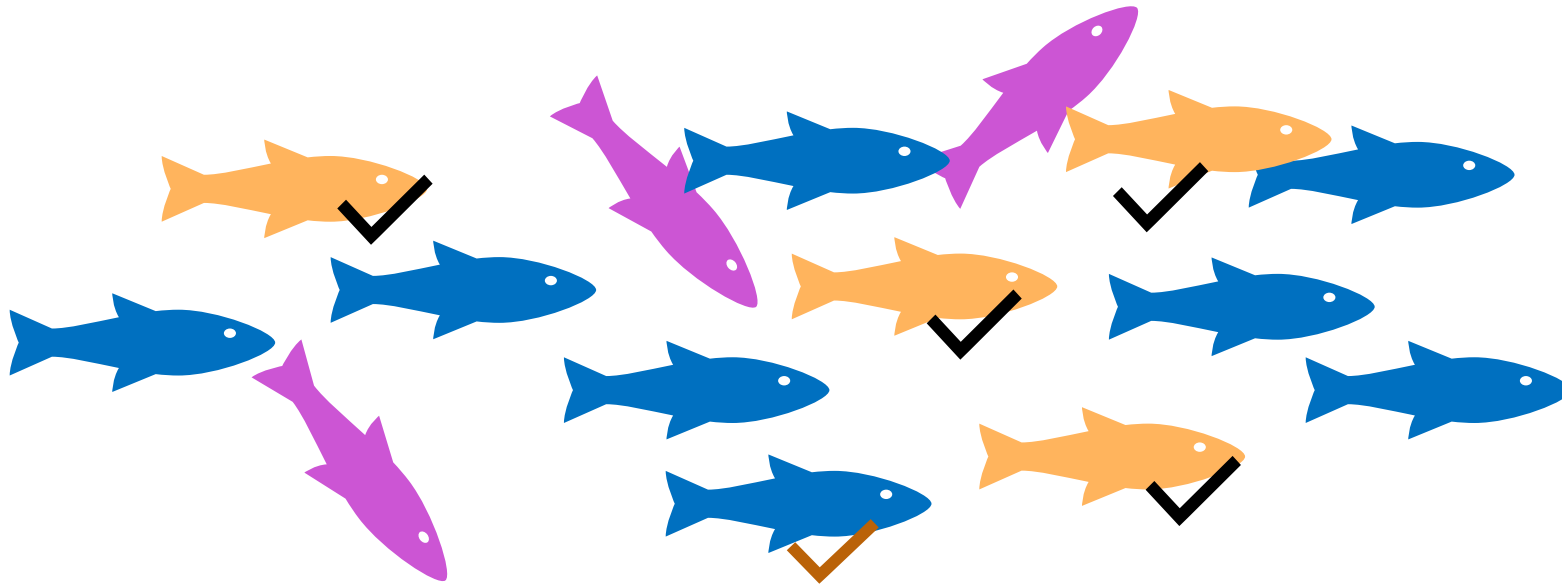


How does my healthy fish look like internally?  
Which organs do I need to sample?



# Sampling and specimen selection

The right individuals need to get samples!!!



Healthy 

Acute 

Chronic / dead 

# Sampling of fish

The first and most important step for a sound diagnosis

- Sample sick/moribund fish
- Include healthy fish
- Sample fish with before feeding
- Cull fish intended for further diagnosis
- Sample the right material (organs etc)
- Pack fish in ziplock –best vacuum seal (double seal)
- Place immediately on ice
- Do not freeze fish
- Do not include water in bags
- Follow shipment instruction





# Sampling of fish

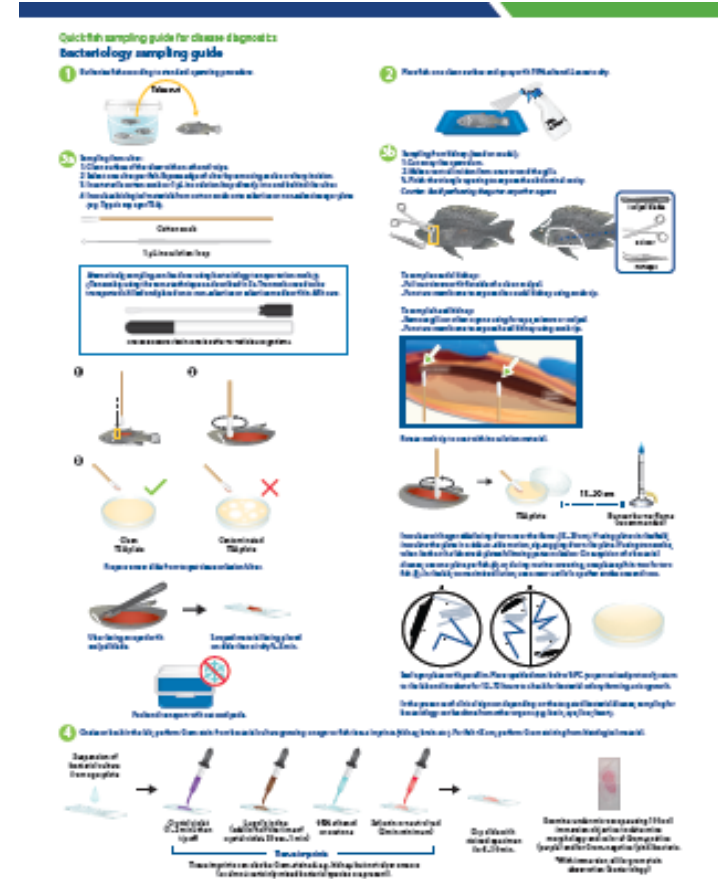
Sample before any treatment! \ Label samples correctly

For correct diagnosis it is important to include next to basic farm data:

- Species
- Batch/Ko-hort ID
- Water Temperature (dC)
- Salinity (ppt)
- Average body weight (g)
- System of farming (flow through, RAS, cages)
- How many fish are affected/mortality
- When did it start (acute, chronic)
- Was there already a treatment (what...)
- Other relevant info

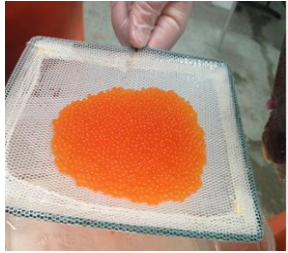
Train your staff and establish clear sampling SOPs!

Collaborate with a local fish veterinarian!



# Sampling and shipment of diagnostics

## Sampling for PCR (molecular screening)



Eggs, ovarian fluid, organs, whole carcasses

- Cooled/vacuum sealed
- Express shipping
- Leakproof wrapped (ZIP Lock)
- In Ethanol or DNALater

Swabs (organs)

- Express shipping

ANICARD  
Inactivates and  
preserves DNA/RNA

- Express shipping



**Thank you!**

Time for questions and discussions.....

Global Business Development Director- Aqua, Markus Schrittwieser  
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