SALMAX Research

Gill swabs reveal early PRV-1 infection

Trinations April 17th 2026

Salmax Research

- Veterinary services, analytics and R&D activities
- 7 employees
- Specialist company with expertise in microbiology
- Own microbiological laboratory in Kolvereid
- 5 years of research behind the main product: Salmo Surveillance
    - Non-lethal, non-invasive pathogen surveillance
    - PRV as proof of concept

VISION

Define the future of disease control and enable **proactive fish health management**

Piscine orthoreovirus (PRV-1)

- Common viral infection in farmed salmon
- Infects blood cells, heart, and muscle
- Associated with HSMI, but often subclinical
- Can reduce fish robustness and performance
- May cause production losses and added costs

Hypothesis:

- Early detection can support early interventions and reduce production impact

Challenges:

- Unknown infection dynamics
- Lethal sampling methods
- Limited field experiences

Cohabitant challenge

- Research questions:
  - Can PRV-1 be detected in non-lethal samples?
  - Is detection in non-lethal samples more sensitive than sampling blood?
  - Where is the entry of infection?
  - What is the route of shedding?
  - Does detected levels of virus correlate with disease severity?

Innovation Norway

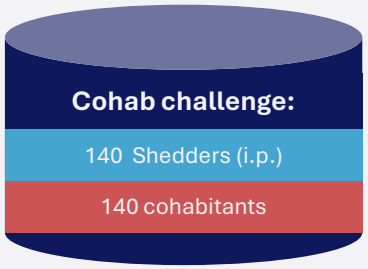
Norwegian University of Life Sciences

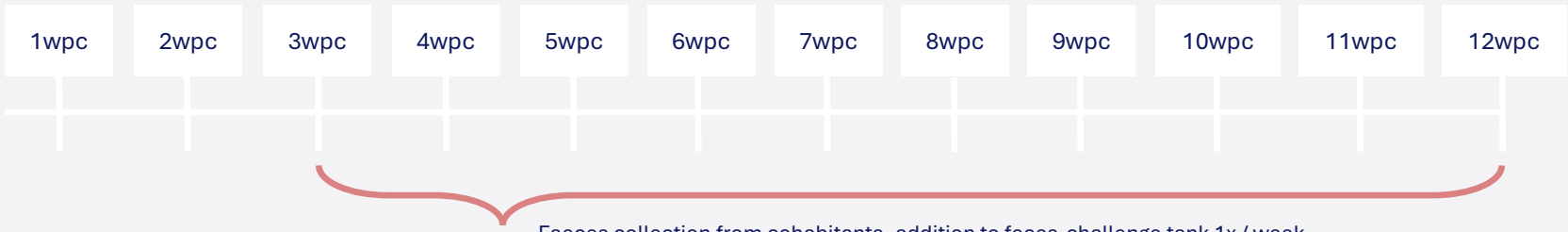
VESO AQUALAB

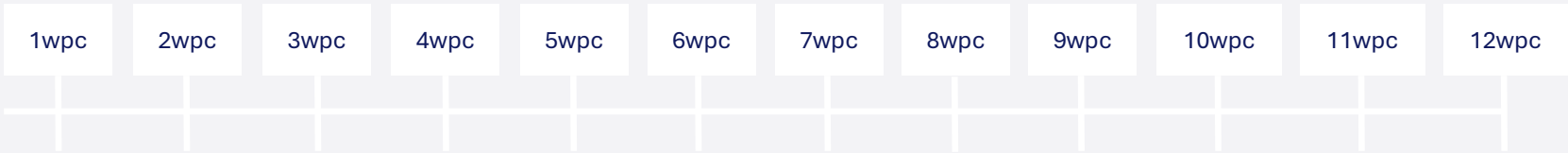
Cohabitant challenge

- *VESO Aqualab*
- *Smolt > 100 grams*
- *10 fish in each group were sampled weekly*
- *Followed for 12 weeks*

Samples **Cohabitants**	
Virus detection • Blood • Heart (RNAlater) • **Swab Vent** • **Swab Gills** • **Swab Fins** • **Faeces** (RNAlater)	Histology • Heart • Skeletal muscle • **Gills** • **Intestine**



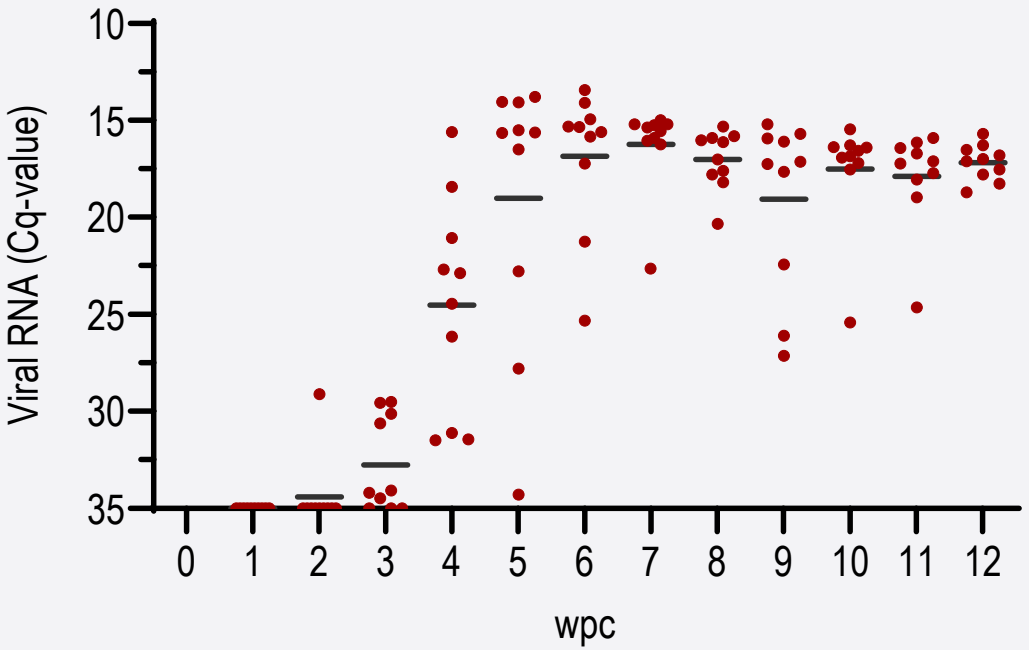




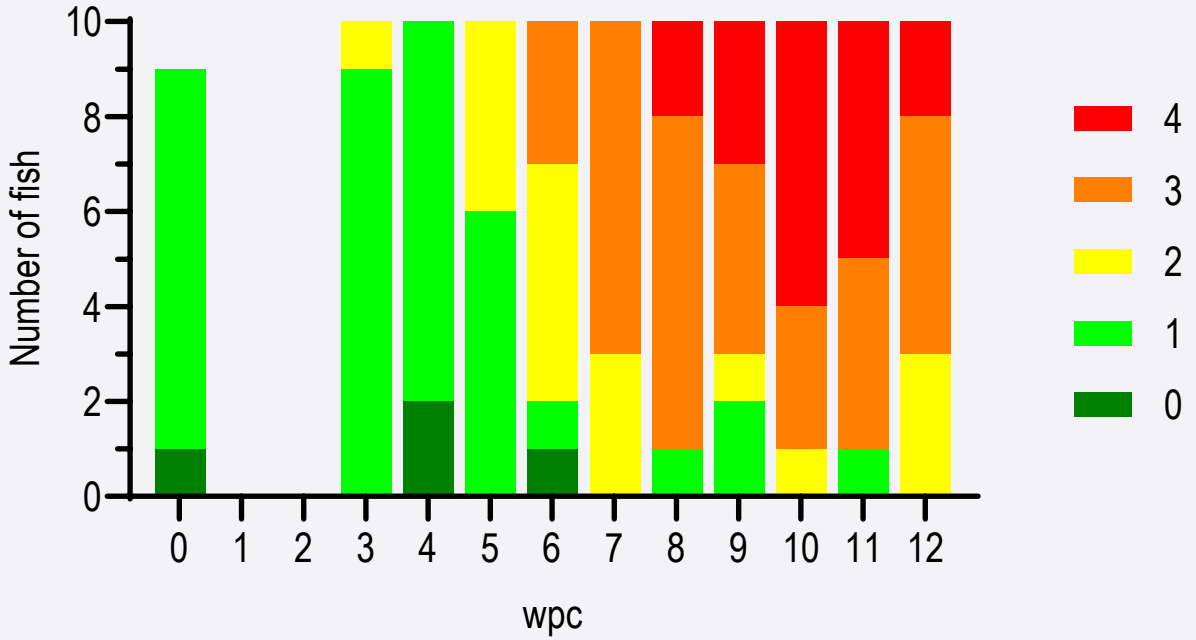
Faecal infection samples
- Blood
- Swab Vent

Results

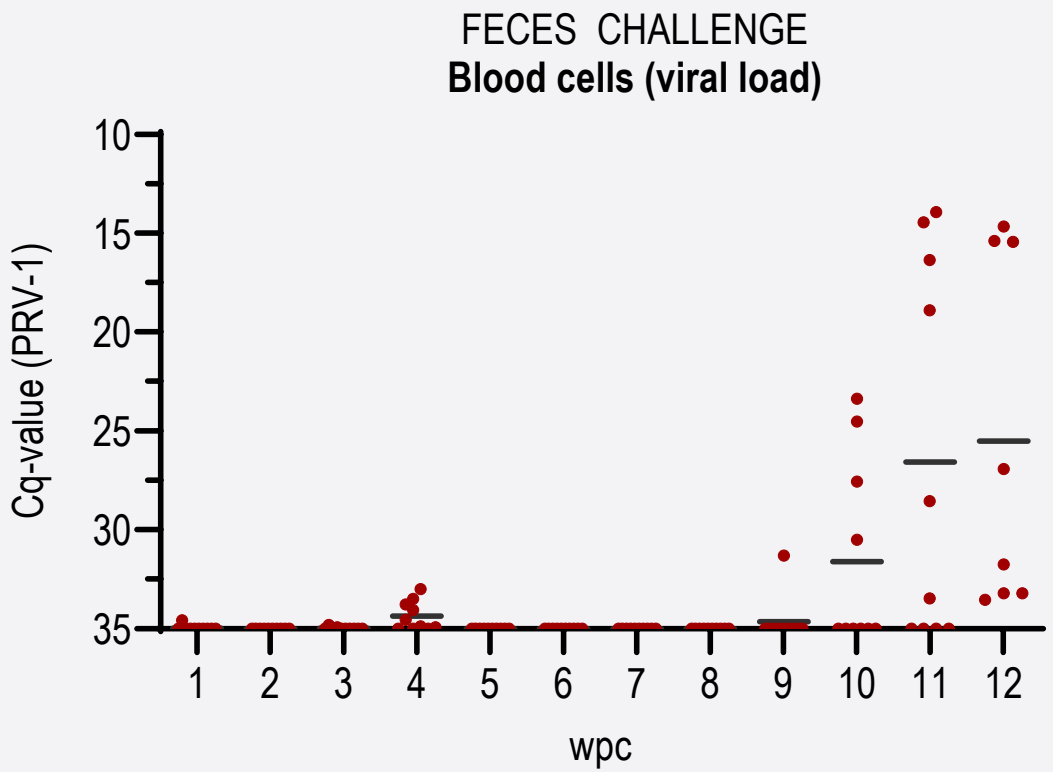
COHABITANT
Blood cells (viral load)



COHABITANT
Heart ventricle (histopathology)



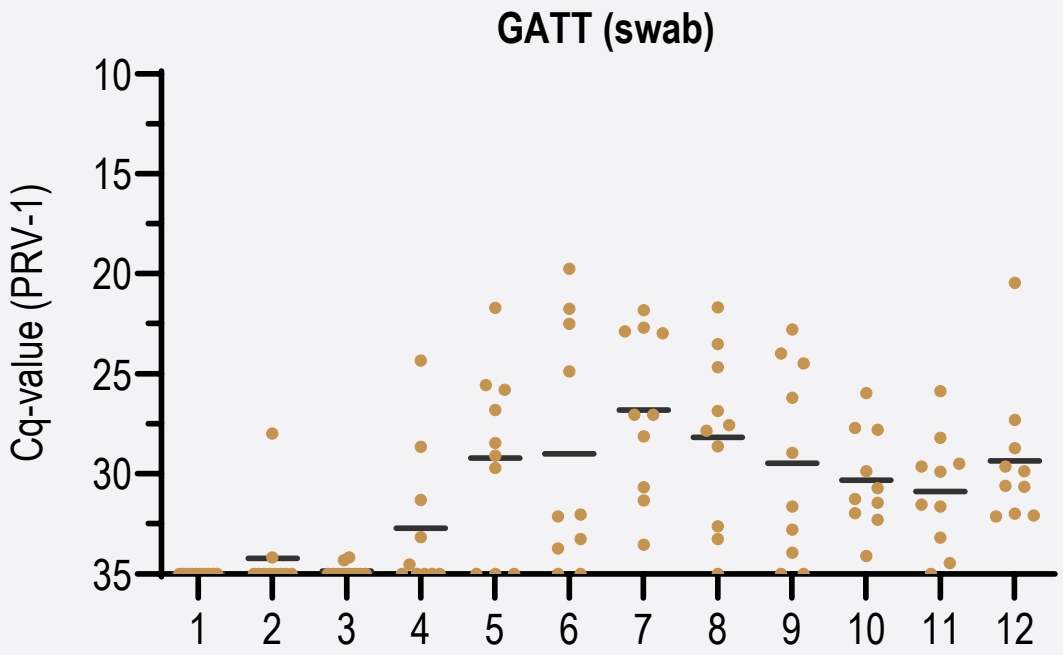
Results

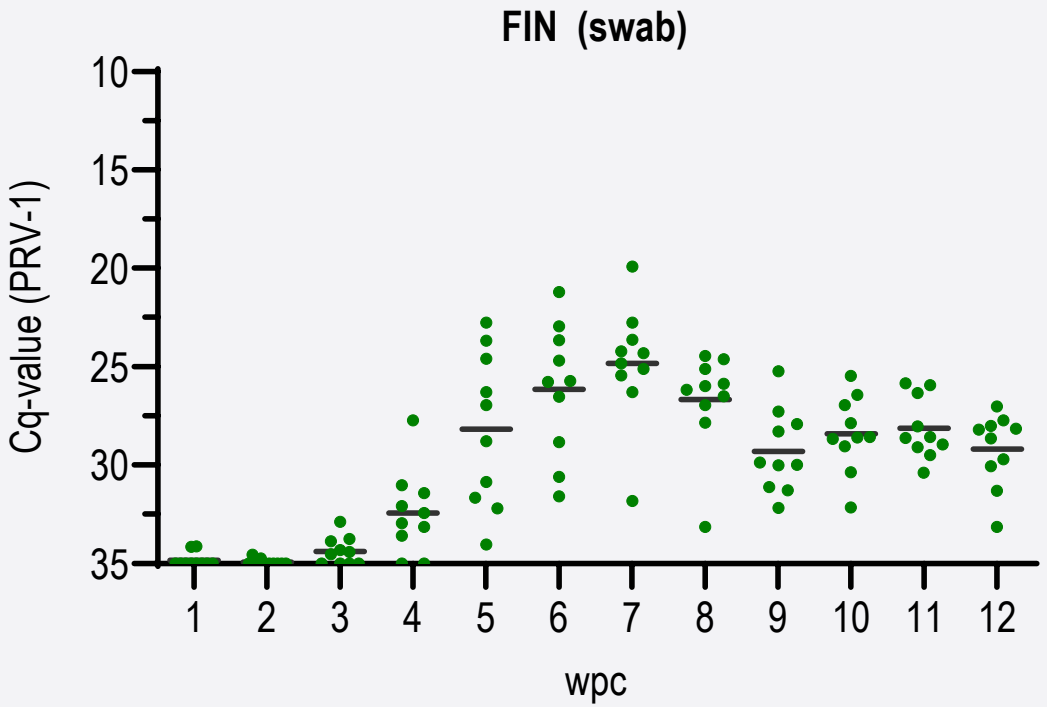


Not conclusive:

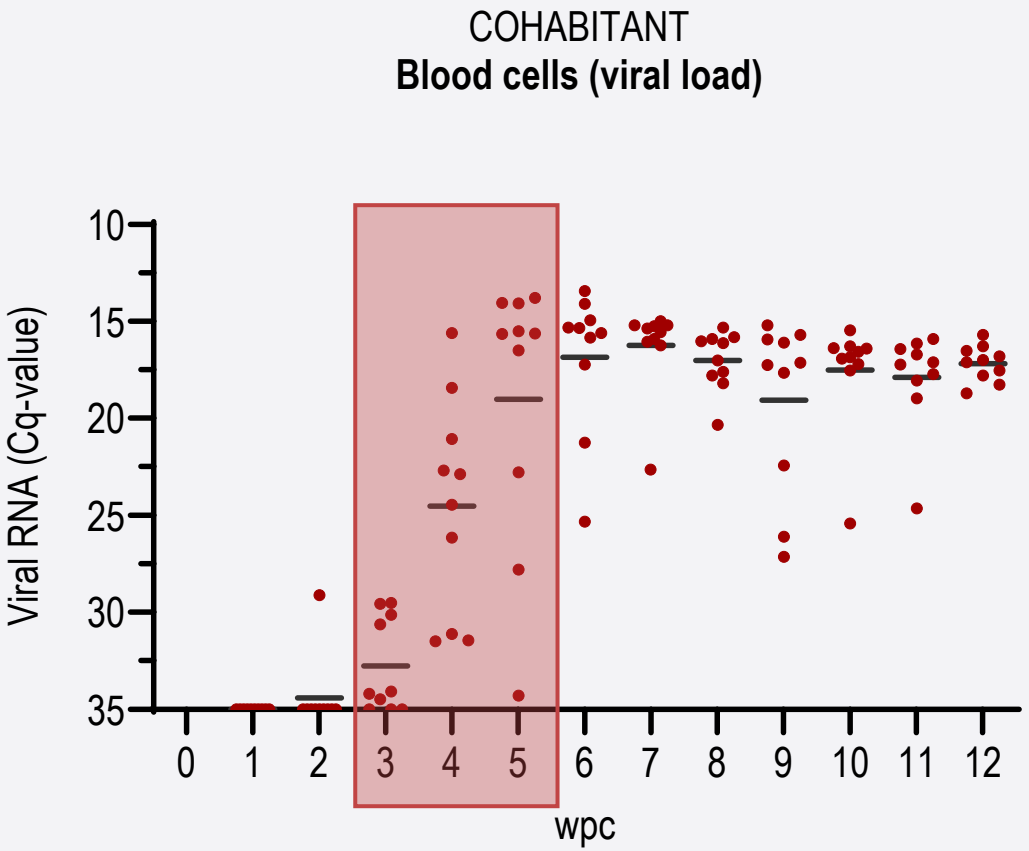
- Too little material?
- Too short exposure?
- Not an important route of infection

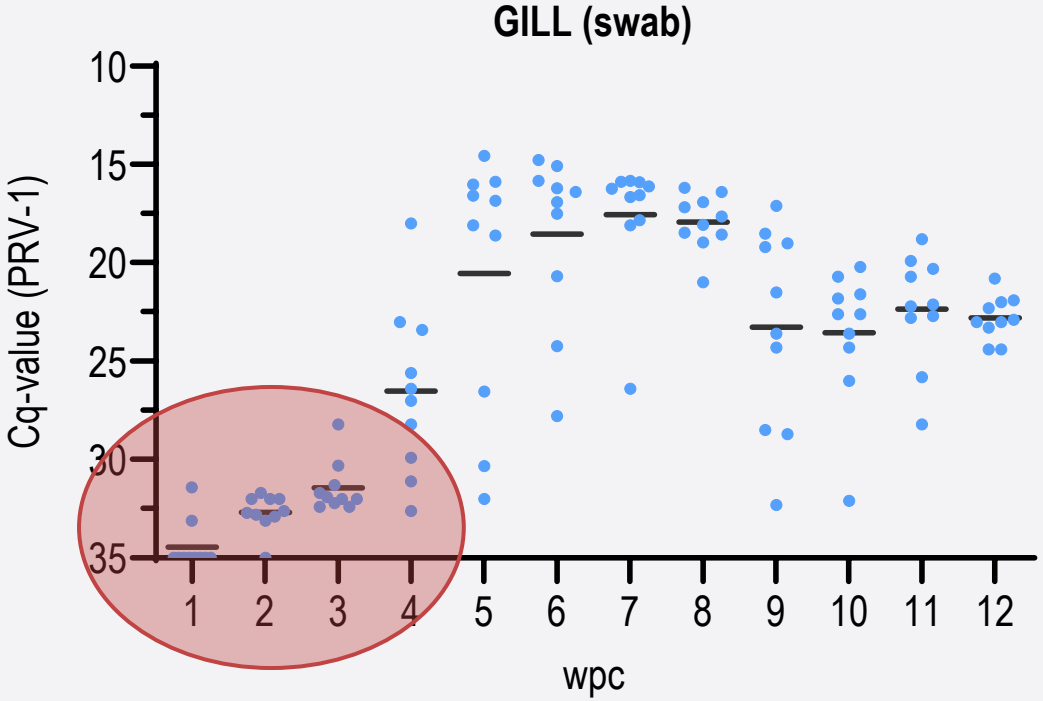
Results


GATT (swab)
Cq-value (PRV-1)
10
15
20
25
30
35
1
2
3
4
5
6
7
8
9
10
11
12

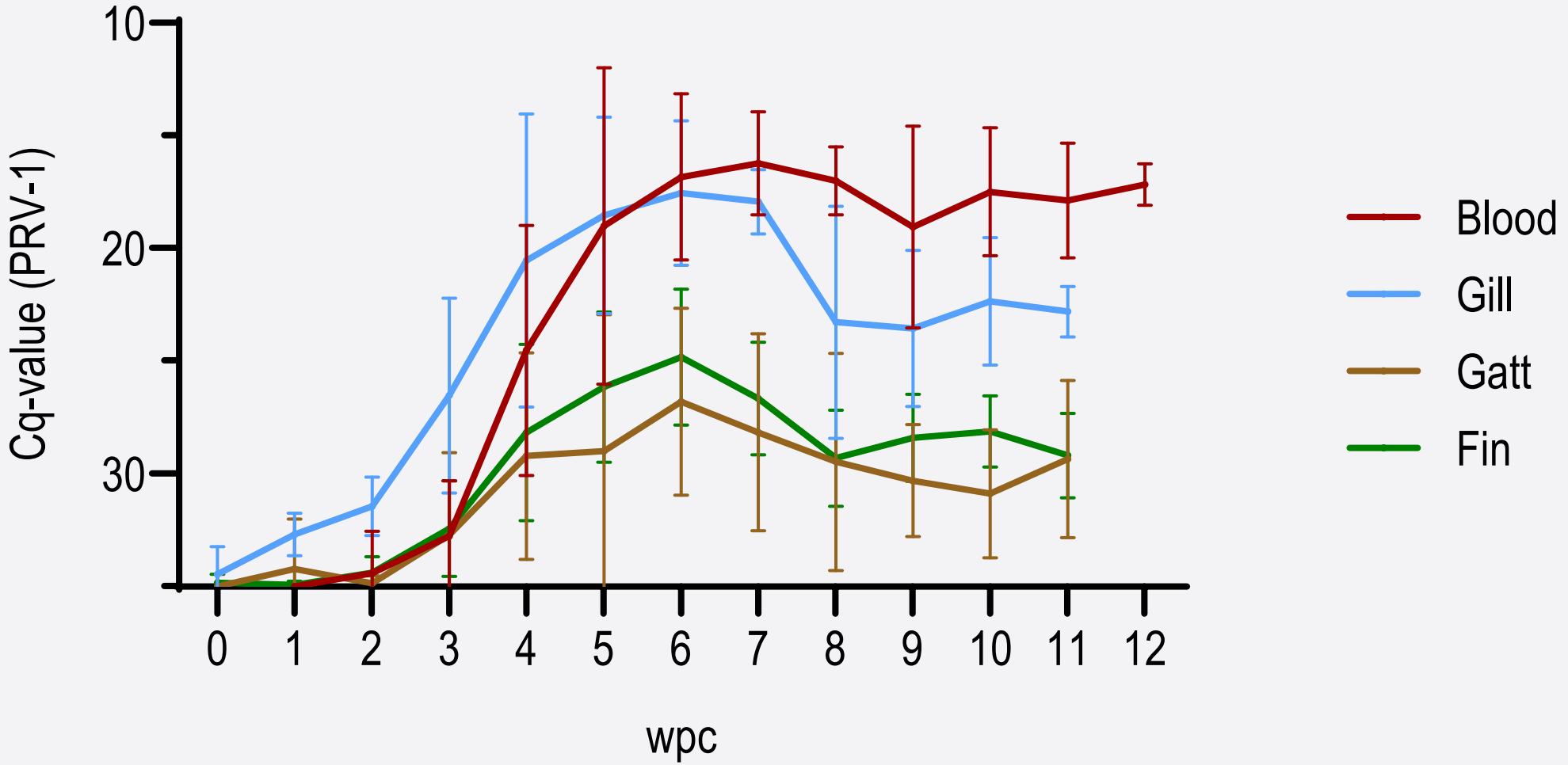

FIN (swab)
Cq-value (PRV-1)
10
15
20
25
30
35
1
2
3
4
5
6
7
8
9
10
11
12
wpc

Results


COHABITANT
Blood cells (viral load)
Viral RNA (Cq-value)
10
15
20
25
30
35
0 1 2 3 4 5 6 7 8 9 10 11 12
wpc


GILL (swab)
Cq-value (PRV-1)
10
15
20
25
30
35
1 2 3 4 5 6 7 8 9 10 11 12
wpc

Results


10
20
30
Cq-value (PRV-1)
0
1
2
3
4
5
6
7
8
9
10
11
12
wpc
Blood
Gill
Gatt
Fin

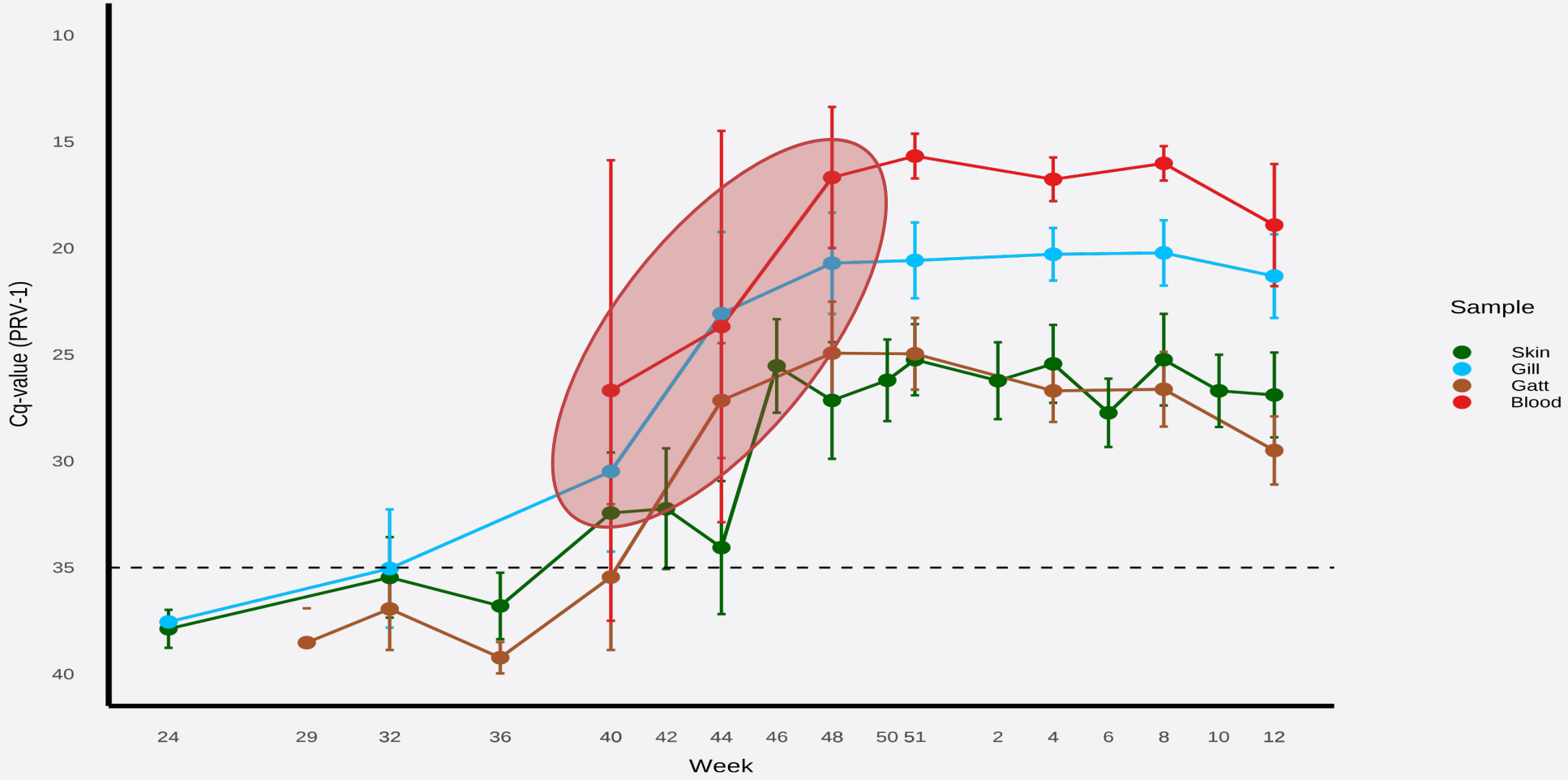
Confirmed in field monitoring

- Experimental findings were confirmed in commercial fish groups.
- PRV-1 was monitored in 3 groups from 2 farmers followed since fall 2025
- Samplings every 4 weeks (skin swabs every 2 weeks)
- Non-invasive detection precedes viremic detection in blood
- Strong gill–blood correlation was observed early in infection for all groups
- Strengthens the case for gill swabs in early detection and longitudinal monitoring
- Expanded to include other pathogens as well
- 15 new fish groups in 2026

Salmo Surveillance

Transforming data to actionable intelligence

Field monitoring



Preliminary conclusions

- Gills are suggested an important entry site for PRV-1
- Fecal–oral transmission seems unlikely to be an important shedding route
- Gill swabs enable early, non-invasive detection in controlled conditions
- Gill swabs are promising for detection in field conditions

- Final testing and analysis to be finished by Q3 2026
- Scientific publishing

Special thanks to our collaborators :

Norwegian University of Life Sciences

VESO AQUALAB

- Øystein Wessel
- Espen Rimstad
- Ingrid Mo

BJØRØYA

Innovation Norway

SINKABERG

Thank you for your attention!

May Linn Buberg

PhD DVM

Chief Science Officer

may.linn.buberg@salmax.no
(+47) 980 77 228