



Veterinærinstituttet
Norwegian Veterinary Institute

Norwegian Veterinary Institute



Haakon Hansen

- Senior researcher (PhD), Norwegian Veterinary Institute (NVI), Norway, in the Fish Health Research Group.
- Research and diagnostics of fish parasites in wild and farmed fish.
- PhD in zoology/molecular systematics of parasites.
- Reference expert for the salmon parasite *Gyrodactylus salaris* in WOAH. NVI is the reference laboratory for this pathogen.
- Chair in the working group for *G. salaris* in the North Atlantic Salmon Conservation Organisation, NASCO
- https://www.researchgate.net/profile/Haakon_Hansen



Our mission...

The Norwegian Veterinary Institute is a **research institute** in the areas of **animal health, fish health** and **food safety**, whose primary function is supply of **independent research-based** knowledge **support** to the **authorities and the animal food production industry**.



Core activities:

- Diagnostics
- Research
- Innovation

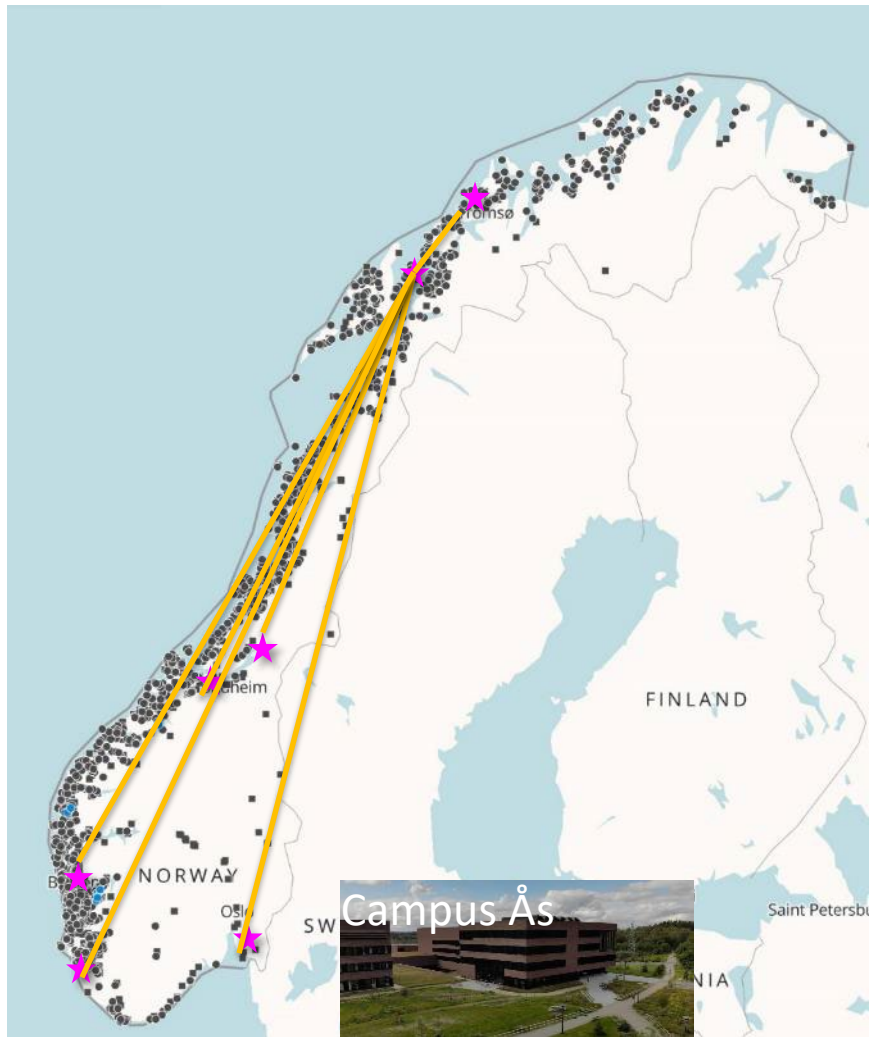
Main tasks:

- Contingency planning
- Reference laboratory/centers (NRL/IRL)

Annual figures (2021):

- 7 office locations
- 334 employees, 126 PhD;
- 90 research projects
- 146 publications

Map from Barentswatch: www.barentswatch.no





NVI is the **National Reference Laboratory** for more than 30 diseases of terrestrial and aquatic animals.

NVI is the **WOAH Reference Laboratory** for:

- *Infection with infectious salmon anaemia virus*
- *Infection with Gyrodactylus salaris*
- *Infection with salmonid alphavirus*
- *(Chronic Wasting Disease)*

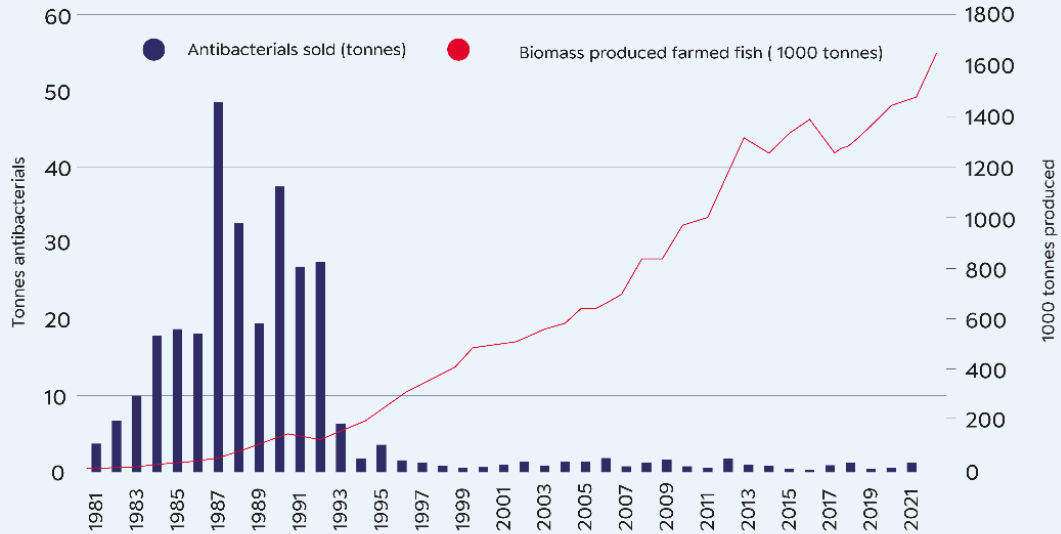
and the **WOAH Collaborative Center** for

- *Epidemiology and Risk Assessment of Aquatic Animal Diseases, Europe (ERAAAD)*
- *The Economics of Animal Health*



**World Organisation
for Animal Health**
Founded as OIE

Norwegian fish (salmon) farming

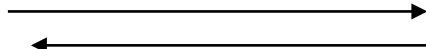
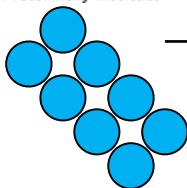




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Fish Health Services

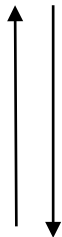
Farm



Fish Health Services

Sharing information
Transparency
Trust

Listed disease



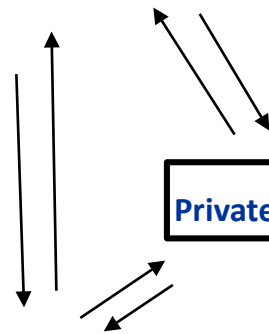
Food Safety Authority

Listed disease



NVI

Private labs



Maps on web



Fish Health Report



Parasitter og blodlegemer på gjellen til en settefisk forstørret 3100 ganger. Bildet er tatt med skanning elektronmikroskop og fargelagt. Foto: Jannicke Wilk-Nielsen, Veterinærinstituttet

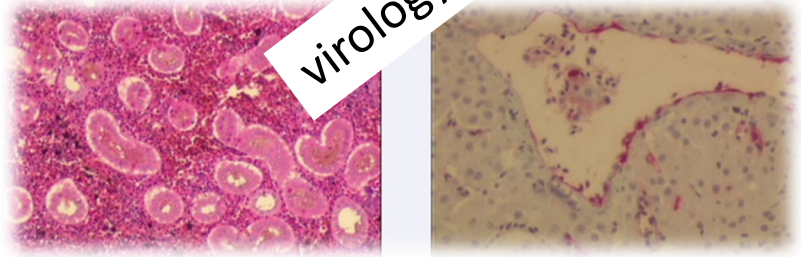
- Annual report
- Public data
- NVI's diagnostic lab data
- Private laboratories and farming companies
- Questionnaire for fish health personnel

<https://www.vetinst.no/rapporter-og-publikasjoner/rapporter>

bacteriology



virology

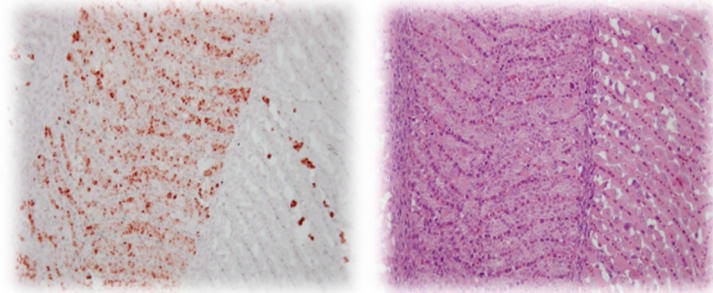
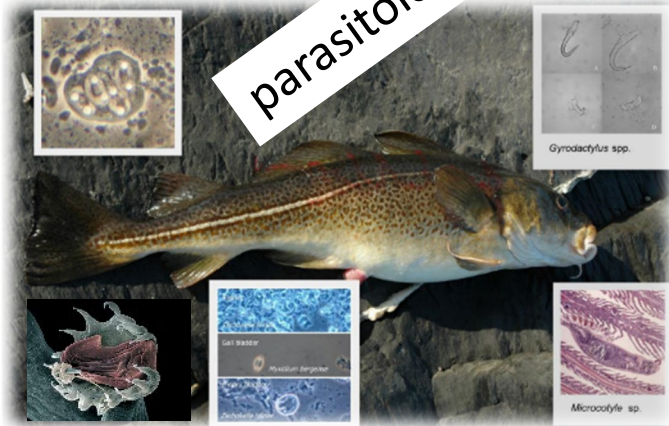


Disease investigation

Epidemiology and surveillance

Histopathology and digital histopathology

parasitology

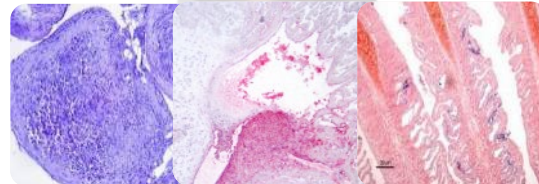
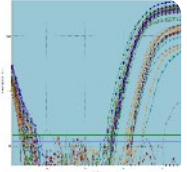


Disease investigation – individual samples

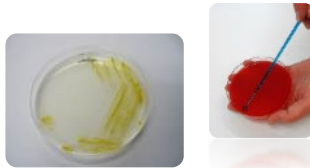
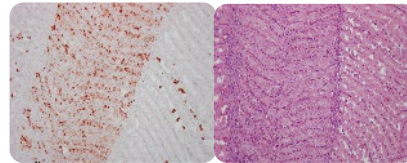


Virus
cultivation

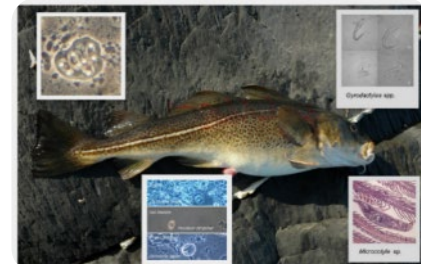
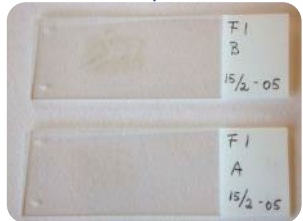
PCR



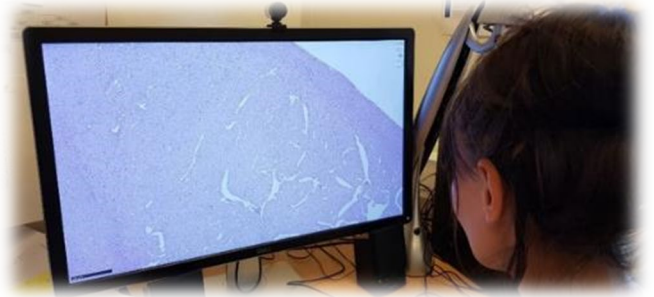
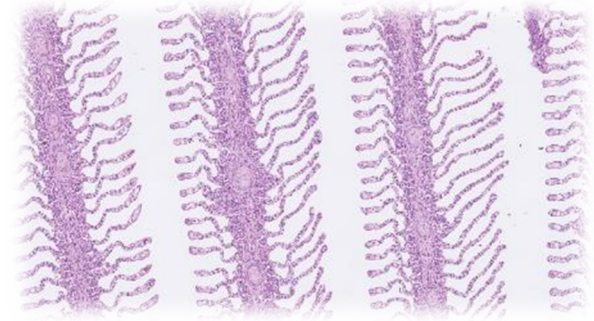
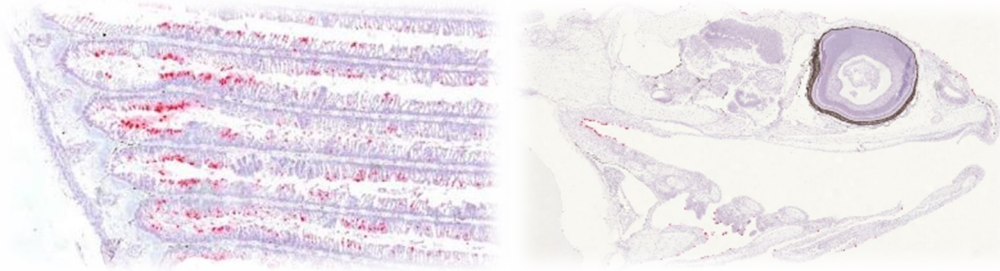
Histopathology/IHC/Special staining



Bacteriology- culture



Parasitology



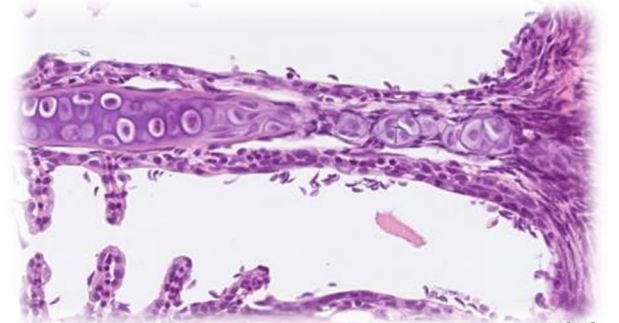
Automated *in situ* hybridization

ca. *Branchiomonas cysticola* ISH
Mona Gjessing, Fish Health Report 2022

Salmon gill pox virus ISH
Exp infection, Mona Gjessing



Leica Bond RXm robot.
Immunohistochemistry and *in situ* hybridization (RNAscope)



Gyrodactylus



Gyrodactylus salaris is associated with mortality of wild salmon in Northern Europe



Gyrodactylus cichlidarum is associated with mortality of farmed tilapia worldwide.

Photos: Haakon Hansen, Kjetil Olstad, Adriana Garcia-Vasquez

International development collaboration

- **Projects in**

- Africa (AHA-project, Ghana, Madagascar)
- South America (Colombia)
- Asia (NACA)

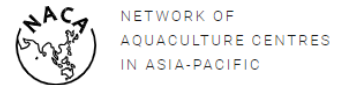
- **In collaboration with/funded by**

- Norwegian Agency for development cooperation, Norad
- FAO
- WOH
- WorldFish
- The Royal Norwegian Society for Development (Norges Vel)

- **Twinning**
 - Brazil



NORGESVEL



Potential contributions to international collaboration

- Provide practical and theoretical knowledge on aquatic animal health management
 - ❑ Tailored Courses in aquatic epidemiology, risk analysis and outbreak investigations.
 - ❑ Courses to small-scale farmers, extension staffs, researchers, policy people and regulatory authorities on best practices in fish health management
 - ❑ Biosecurity
 - ❑ Design of surveillance programs
 - ❑ Data collection/registration
 - ❑ Fish disease diagnostics, incl. quality assurance/traceability
 - ❑ Laboratory diagnostics - now including competence transfer using digital histopathology
- Support in data analysis, study design and supervision
- The use of environmental DNA (eDNA) in surveillance.



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Thank you!

