



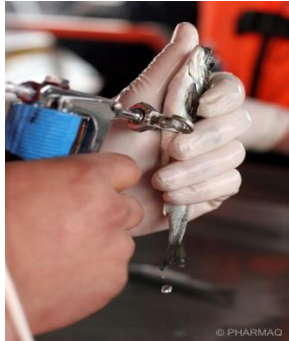
PHARMAQ_GMS

Vaksine produksjon på Kløfta og Overhalla

2020 September LMI

Trude B. Parnas

PHARMAQ



AQUA CULTURE

VACCINES
THERAPEUTICS
VACCINATION SERVICE
VACCINATION MACHINES

> 2 BILLION

VACCINE DOSES

INJECTABLES (MAIN)
DIP VACCINES

>110 GMS COLLEAGUES

OVERHALLA Bacterial antigens / vaccines

KLØFTA Viral antigens

300 PHARMAQ COLLEAGUES

END TO END BUSINESS
ALL PRODUCT DEVELOPED BY PHARMAQ

MARKET PRESENCE IN

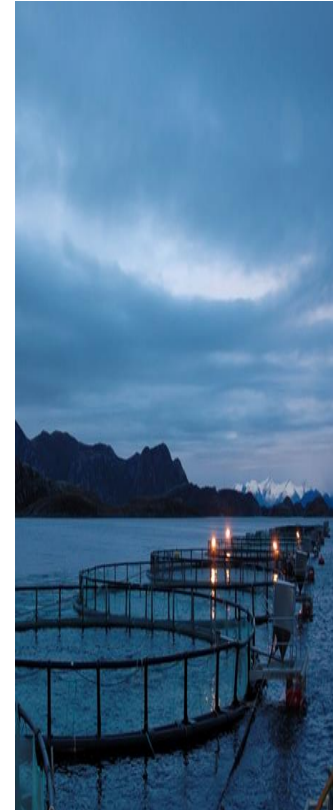
> 20 COUNTRIES

6 CORE FISH SPECIES



PHARMAQ
part of *zoetis*

50 SKUS



PHARMAQ
we make aquaculture progress

zoetis

PHARMAQ Overhalla

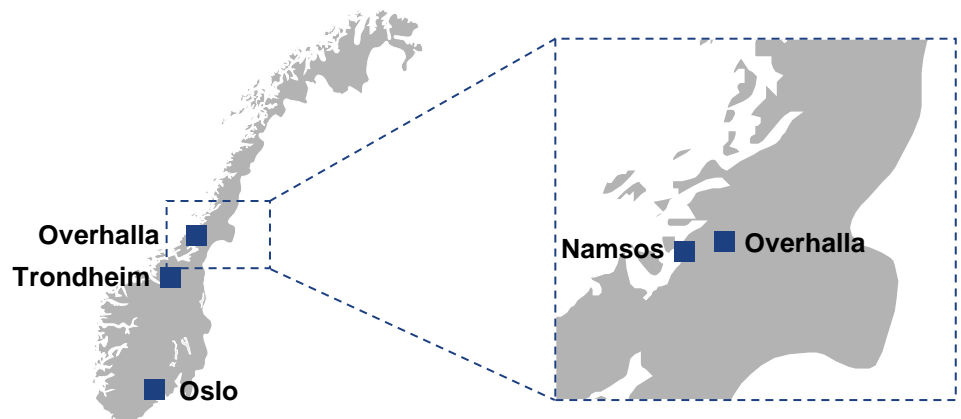
Overhalla is the **main manufacturing facility** of PHARMAQ.

All bacterial antigens (25) and vaccines (40) are produced at this GMP approved site

Total building area of 4000m²
(including the QA /QC laboratory)

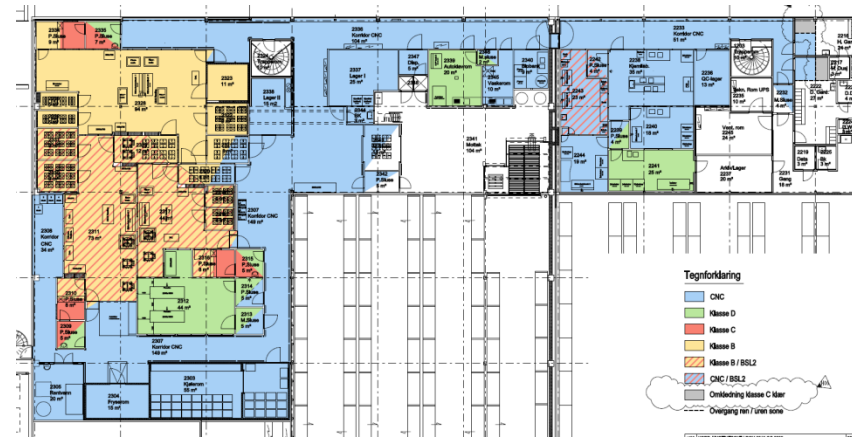
Total area 25000m²

Approximate **80 employees** of which 55 work in production and 25 in QA /QC



Kløfta – VIRAL MANUFACTURING OSLO

- Kløfta «state of the art» singel use site made for aseptic biopharmaceutical GMP-produksjon
- Manufacturing license from NoMA november 2017
- 4 viral antigen (SKU)
- Max capacity 4 batches/week
- Approximate 30 employees
- Approx 2000m² mesanin and 2000m² storage area
- Available area approx 10 000m²



MANUFACTURING STRUCTURE

PHARMAQ Overhalla

PHARMAQ R&D- Skøyen
Oslo

- Responsive to market demands
- No out of stock situations
- Expedient tech transfers

PHARMAQ virus antigen
production, Kløfta



ILAB
In vivo batch testing



In vivo batch testing



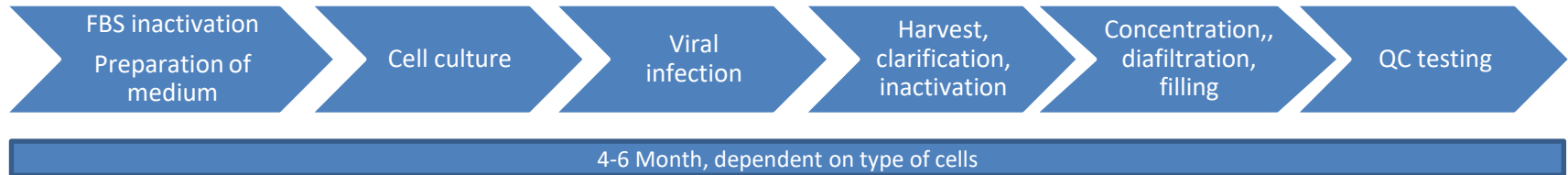
Dessau, Germany, contract
manufacturing, virus antigen

**Future Kalamazoo and
Olot**
Contract manufacturing
Sea Lice Therapeutic

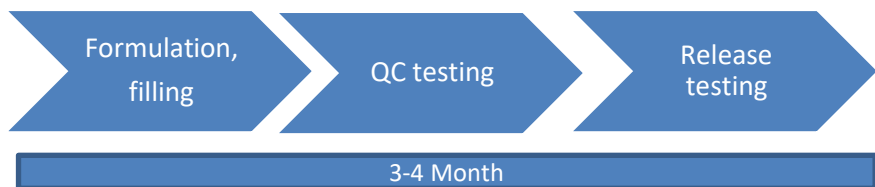
PRODUCTION of viral antigens



Kløfta



Overhalla



Veso Vikan

Total production time: > 9 months

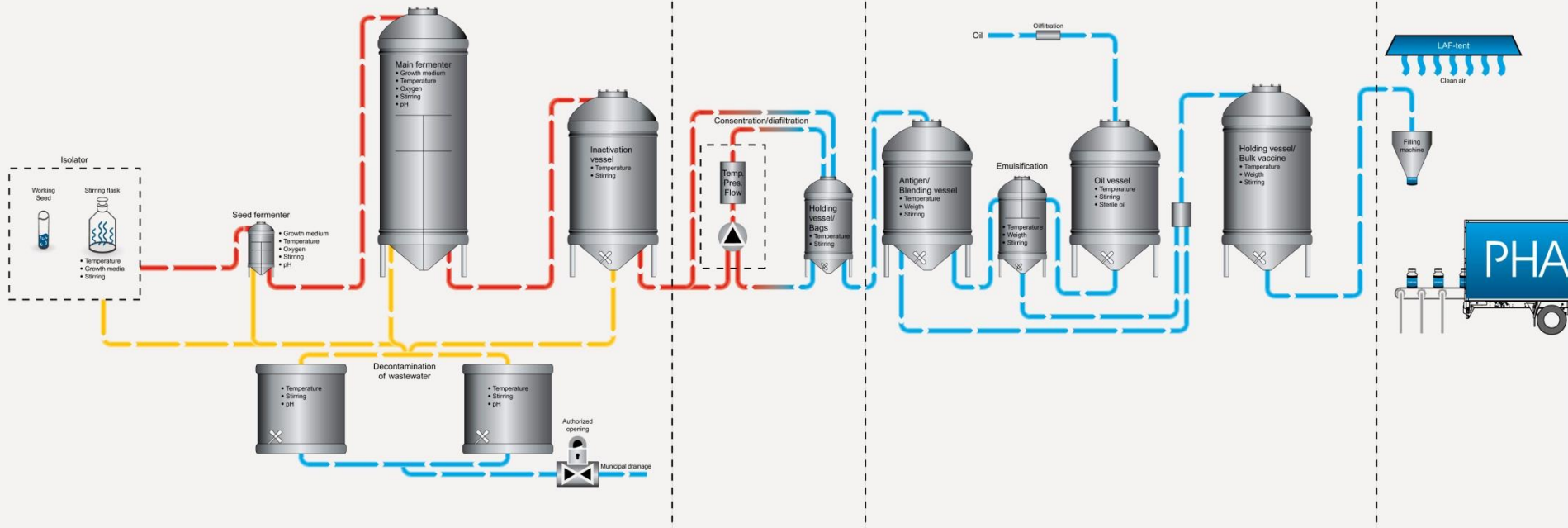
PRODUCTION flow chart Overhalla

Fermentation

Down Stream Processing

Formulation

Filling & Final Processing



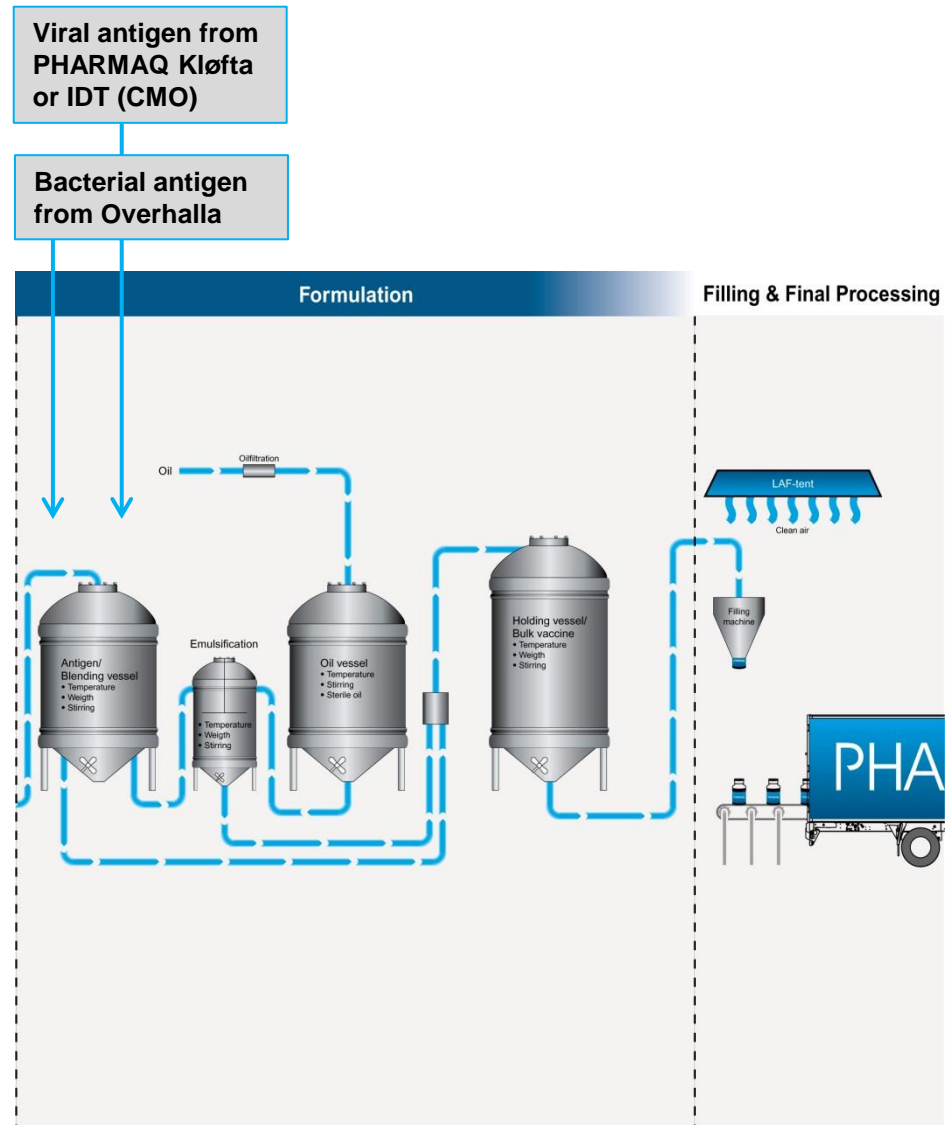
VACCINE MANUFACTURING

Overhalla Site

- > 2 billion doses
- Approx 200-250 000 units
- Inactivated Vaccines (injection and immersion/bath)
- Live Vaccine

One unit of vaccine

- 5 000 to 40 000 doses per unit
- Protection from 1 to 7 different diseases



QUALITY

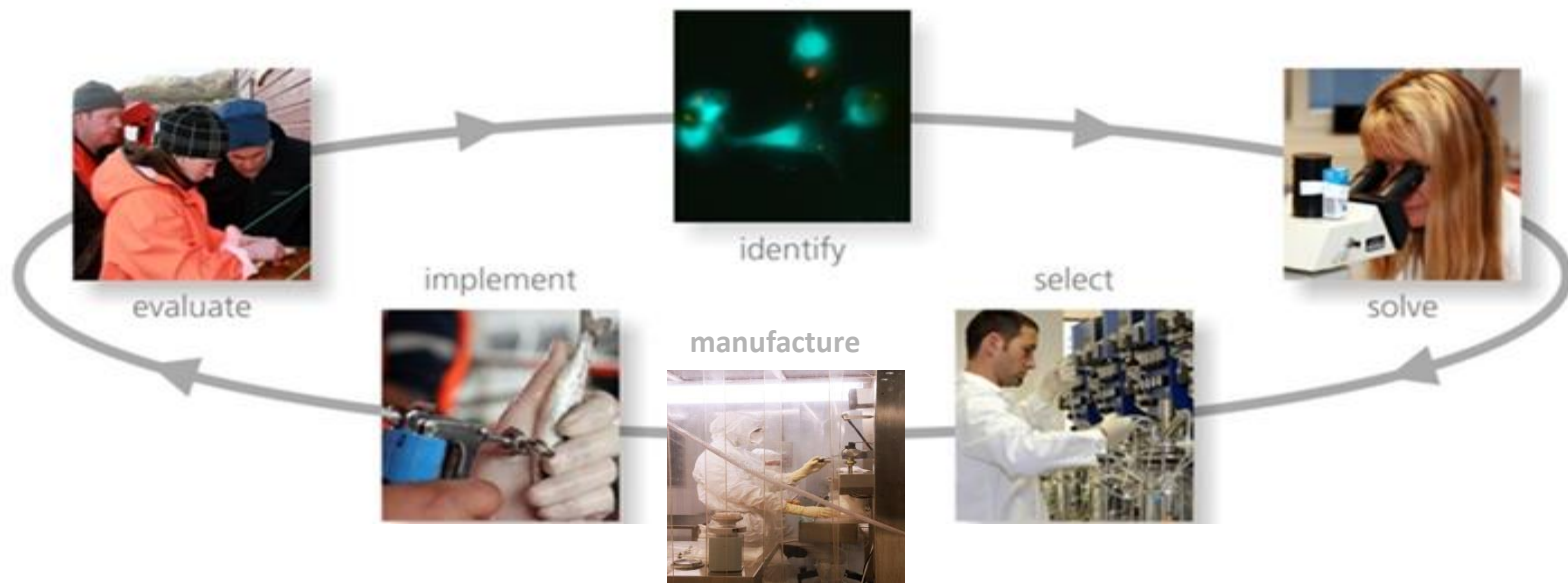
- GMP a quality standard and integrated culture
- Separate QA/QC building
 - Offices and laboratories for QC testing
 - Most of the testing is performed in house



Quality is integrated in everything we do

«END to END»

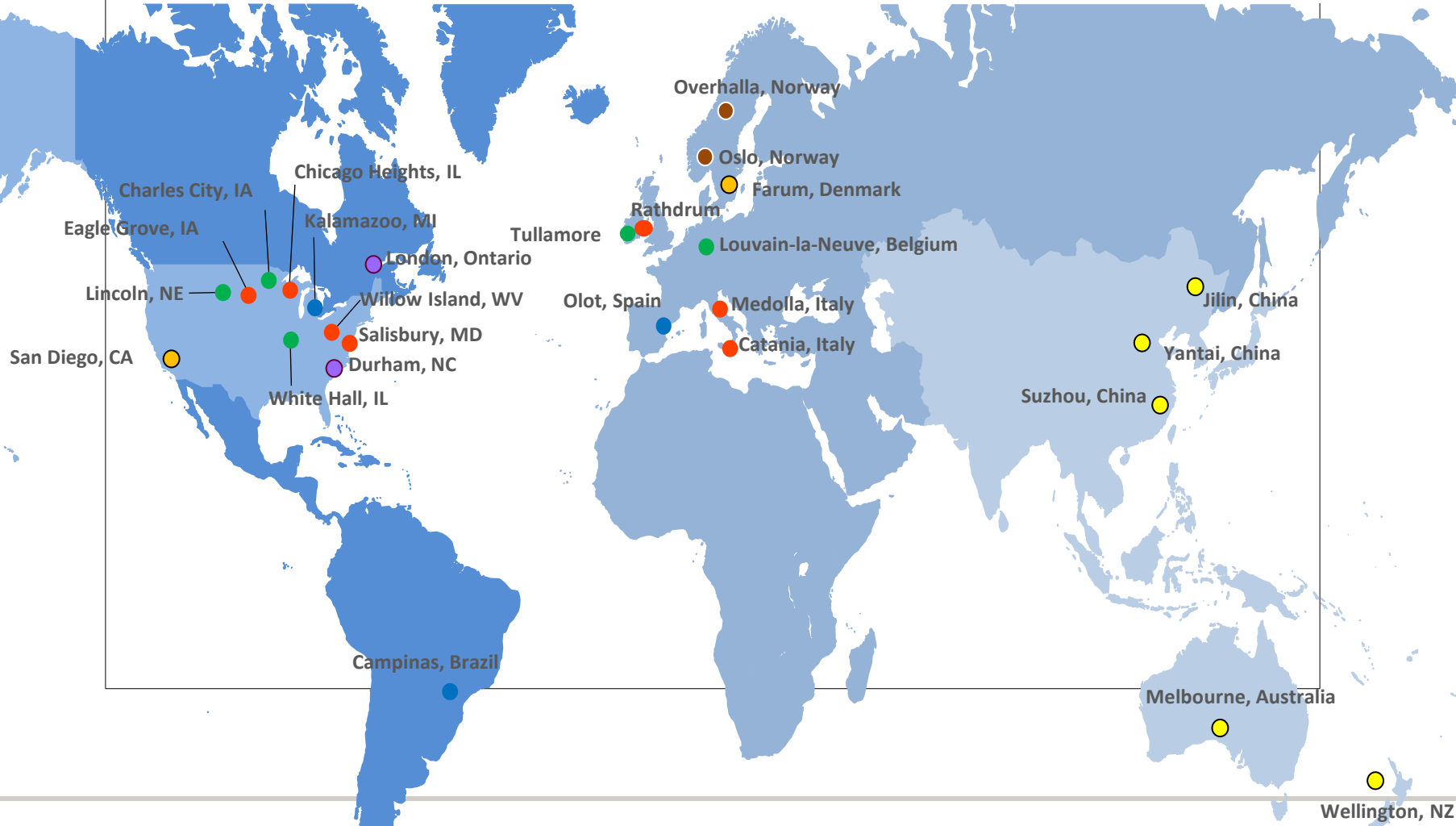
Innovation - Manufacturing - Technical Support



- Singular focus on fish health has made it possible to run an «**end to end**» operation
- Key success factors: correct disease identification, innovative solutions, high quality products and strong technical customer support
- Manufacturing has been able to deliver on time during high growth periods

PLANT NETWORK FOOTPRINT

- Bio
- Pharma
- MFA & API
- APAC
- Diagnostic
- Biodevices
- Pharmaq



**FOR ANIMALS
FOR HEALTH
FOR YOU**



**WE MAKE
AQUACULTURE
PROGRESS**

Thank you for your
attention