

# «Fra sykdomsutbrudd til ferdig diagnose»

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Åpning Marineholmen 15.02.2018



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# Hva kan det være ?



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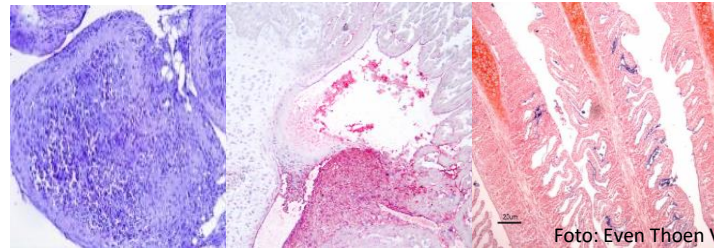
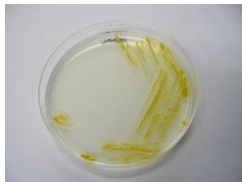
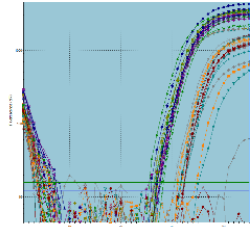
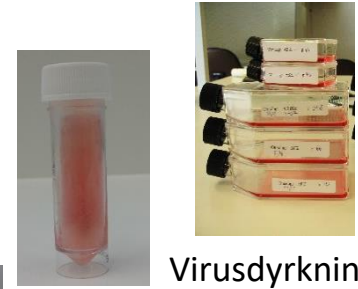
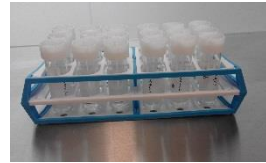




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# Prøvetaking



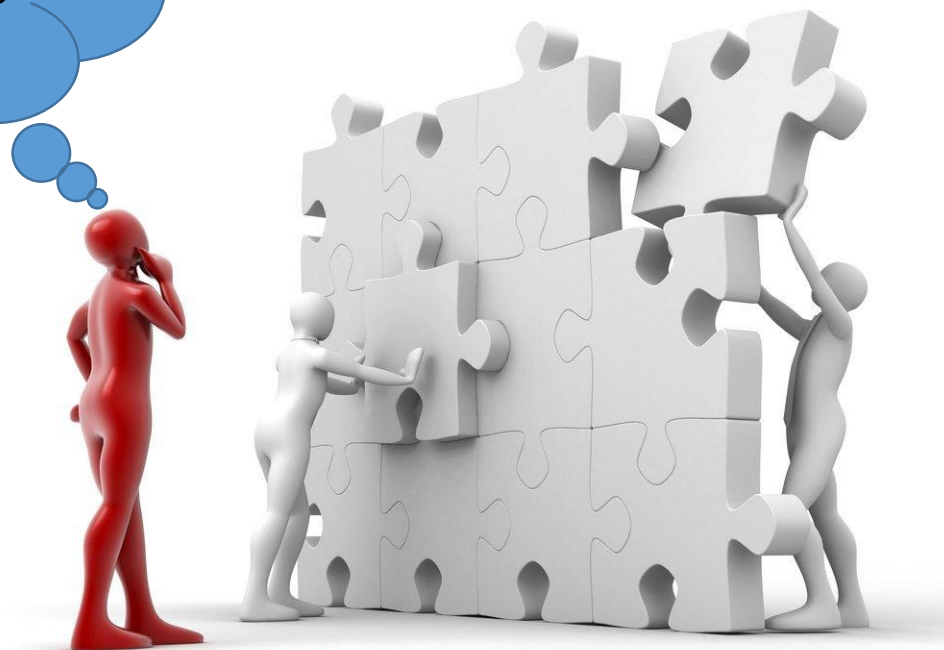
Histopatologi/immunhistokjemi/spesialfarginger



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Kjent ?  
Ukjent ?  
Meldepliktig ?  
«Emerging» ?



NTBscanpix

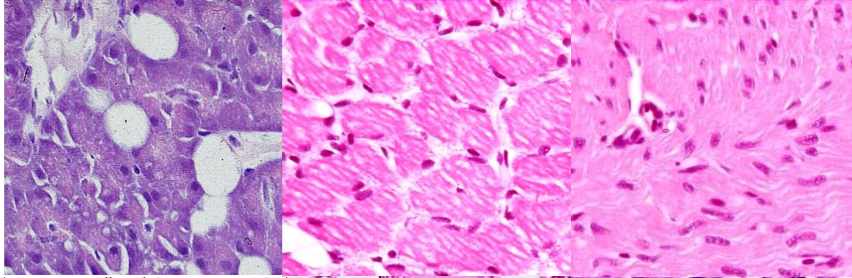


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# Pancreas disease (PD)

Normal



Syk

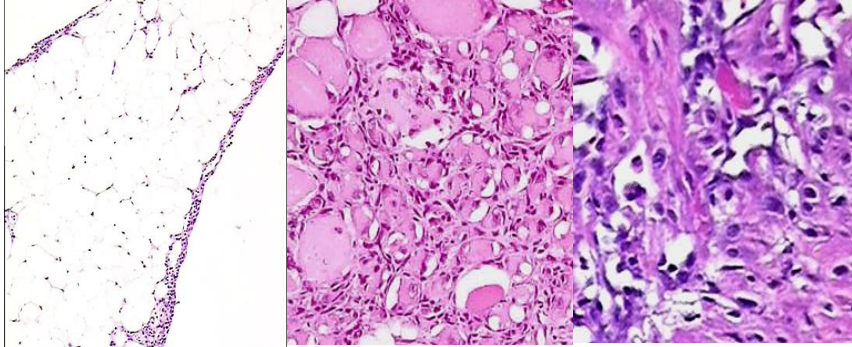
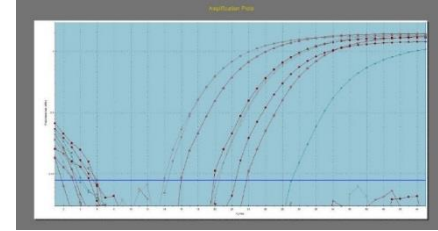


Foto: Anne Berit Olsen



Journal of Fish Diseases 2007, 30, 545-558

## Pancreas disease in farmed Atlantic salmon, *Salmo salar* L., and rainbow trout, *Oncorhynchus mykiss* (Walbaum), in Norway

T Takadai<sup>1,2</sup>, A B Olsen<sup>3</sup>, I Bjerås<sup>4</sup>, M J Hjørtaas<sup>1</sup>, B H Dannevig<sup>1</sup>, D A Graham<sup>4</sup> and M F McLaughlin<sup>5</sup>

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<sup>2</sup> National Veterinary Institute, Bergen, Norway

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<sup>5</sup> Aquatic Veterinary Services, Belfast, UK



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# Vintersår

*Moritella viscosa*/*Tenacibaculum* sp.



Foto: Hege Skjåvik



Foto: AB Olsen

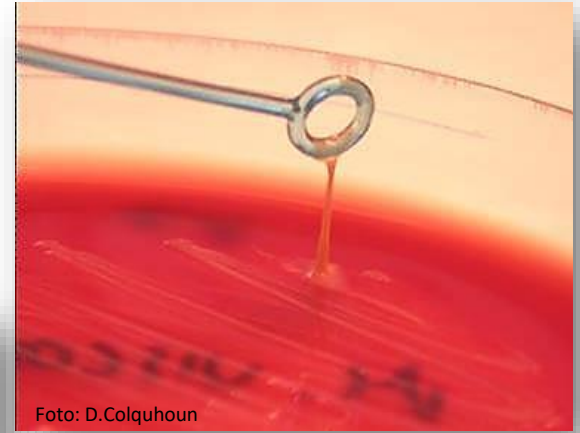


Foto: D.Colquhoun

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ELSEVIER

**Multilocus sequence analysis reveals extensive genetic variety within *Tenacibaculum* spp. associated with ulcers in sea-farmed fish in Norway**

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<sup>b</sup> Norwegian Veterinary Institute, P.O. Box 750 Levanger, 6700 Oslo, Norway  
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Vol. 98, Iss. 196, 2017	DISEASES OF AQUATIC ORGANISMS Dis Aquat Org	Published May 9
10.1016/j.vetmic.2017.04.002		

***Tenacibaculum* sp. associated with winter ulcers in sea-reared Atlantic salmon *Salmo salar***

A. B. Olsen<sup>a,\*</sup>, H. Nilsen<sup>b</sup>, N. Sandlund<sup>c</sup>, H. Mikkelsen<sup>d</sup>, H. Sorum<sup>e</sup>, D. J. Colquhoun<sup>f</sup>

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<sup>f</sup>National Veterinary Institute Oslo, 0108 Oslo, Norway

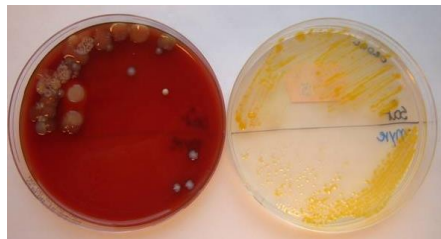


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# Flavobakteriose (RTFS /BCWD)

*Flavobacterium psychrophilum*



Multilocus Sequence Typing Identifies Epidemic Clones of *Flavobacterium psychrophilum* in Nordic Countries

Eric Duchaud<sup>1</sup>, Pierre Nostin<sup>2</sup>, Roger Dalgaard<sup>3</sup>, Lone Holten<sup>4</sup>, Anns Agnes<sup>5</sup>, Eva Jansson<sup>6</sup>, Håvard<sup>7</sup>

frontiers in Microbiology

ORIGINAL RESEARCH  
published: 07 February 2018  
doi: 10.3389/fmicb.2018.00318



<sup>1</sup> Eric Duchaud<sup>1</sup>, Pierre Nostin<sup>2</sup>, Roger Dalgaard<sup>3</sup>, Lone Holten<sup>4</sup>, Anns Agnes<sup>5</sup>, Eva Jansson<sup>6</sup>, Håvard<sup>7</sup>  
<sup>1</sup> Norwegian School of Management BI, <sup>2</sup> Norwegian School of Management BI, <sup>3</sup> Norwegian School of Management BI, <sup>4</sup> Norwegian School of Management BI, <sup>5</sup> Norwegian School of Management BI, <sup>6</sup> Norwegian School of Management BI, <sup>7</sup> Norwegian School of Management BI

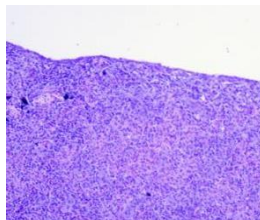
## Genomic Diversity and Evolution of the Fish Pathogen *Flavobacterium psychrophilum*

Eric Duchaud<sup>1</sup>, Tatiana Rochat<sup>1</sup>, Christophe Habib<sup>1,2</sup>, Paul Barbier<sup>1</sup>, Valentin Loux<sup>3</sup>, Cyrille Guerin<sup>4</sup>, Roger Dalgaard<sup>5</sup>, Lone Holten<sup>6</sup>, Håvard Nafstad<sup>7</sup>, Kristin Sundell<sup>8</sup>, Tom Mikkelson<sup>9</sup>, Nicole Sørensen<sup>10</sup>, Thomas Walter<sup>11</sup>, Grete Colwell-Richter<sup>12</sup>, Amedeo Manfredi<sup>13</sup>, Gregory D. Wiersma<sup>14</sup>, Erina Fujiwara-Nagata<sup>15</sup>, Ruben Amador-Hernandez<sup>16</sup>, Jean-François Bernatchez<sup>17</sup> and Pierre Nicolas<sup>18</sup>

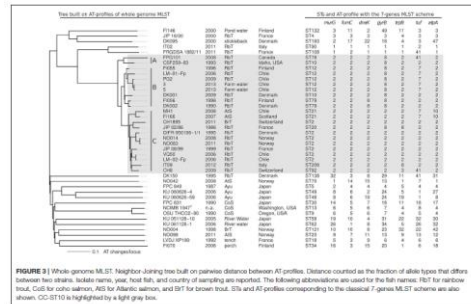
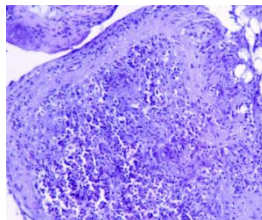
Population Genomics of *Flavobacterium psychrophilum*



Normal



Syk



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# Bakteriologisk diagnostikk

## Molekylærbiologisk påvisning (rtPCR) alene

- Hurtig
- Billig
- Sensitiv
- Spesifikk deteksjon av kjente agens
- Ingen påvisning ukjente agens



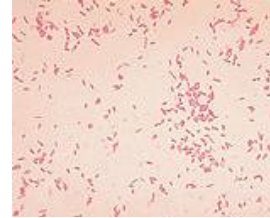
## Klassisk bakteriologiske undersøkelse

- Ikke så raskt - men NYHET – MALDI TOF
- Ikke så billig - men NYHET - MALDI TOF
- Sensitivt
- Mulig å identifisere 'alt' som vokser
  - Også nye 'emerging' agens!
  - Identifiserer blandingsinfeksjoner
- Vaksineutvikling
- Molekylær smittesporing

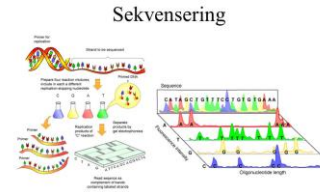
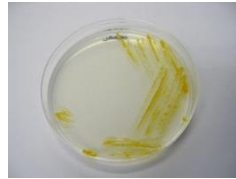


# Identifikasjon av bakteriekulturer

- Tradisjonell



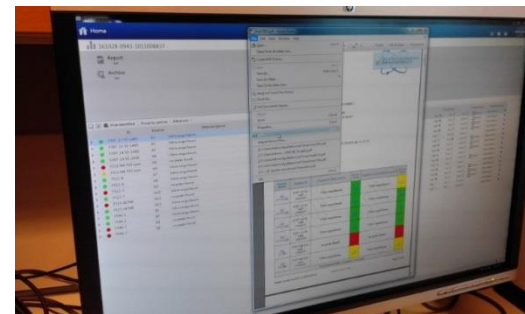
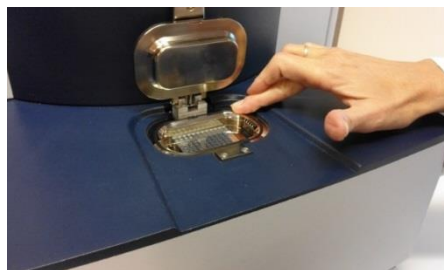
- DNA



- MALDI-TOF



# MALDI –TOF



«TØFFEN»

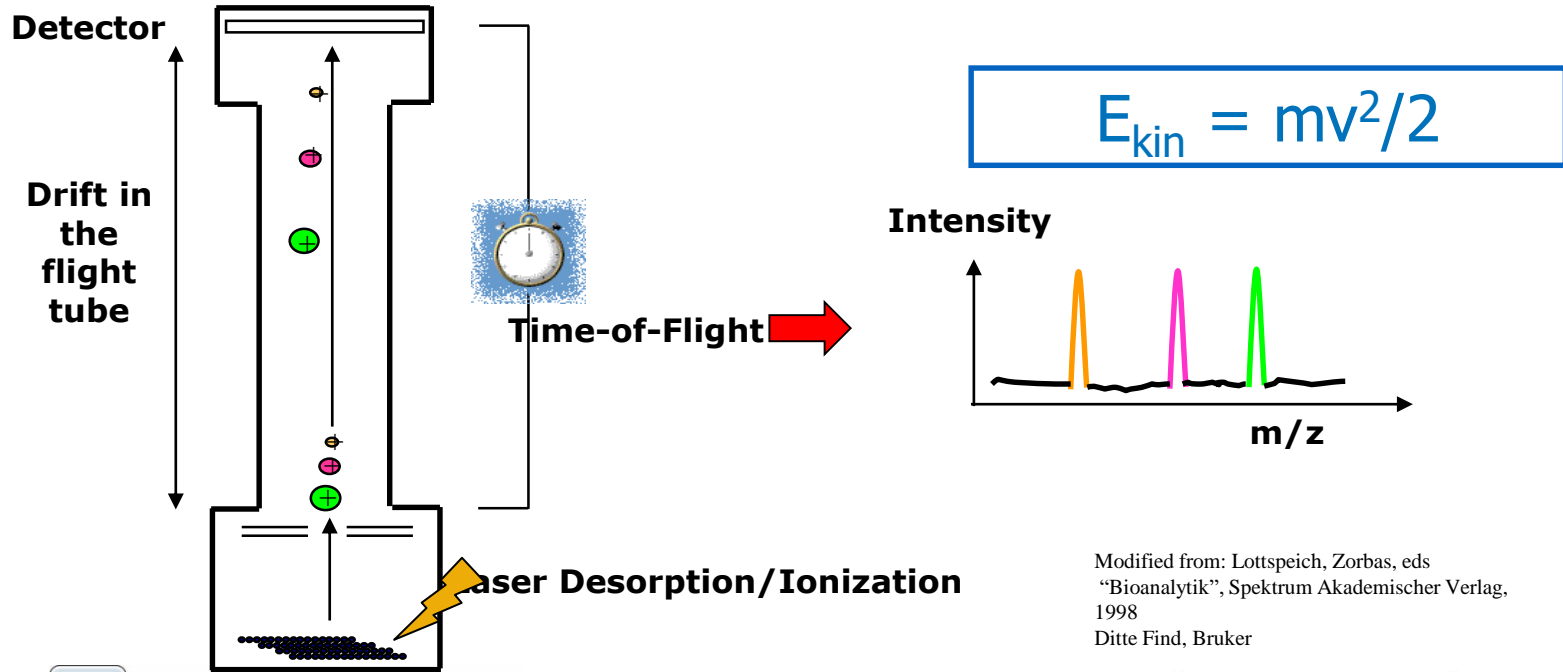


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# MALDI –TOF MS

matrix assisted laser desorption/ionization time of flight mass spectrometry

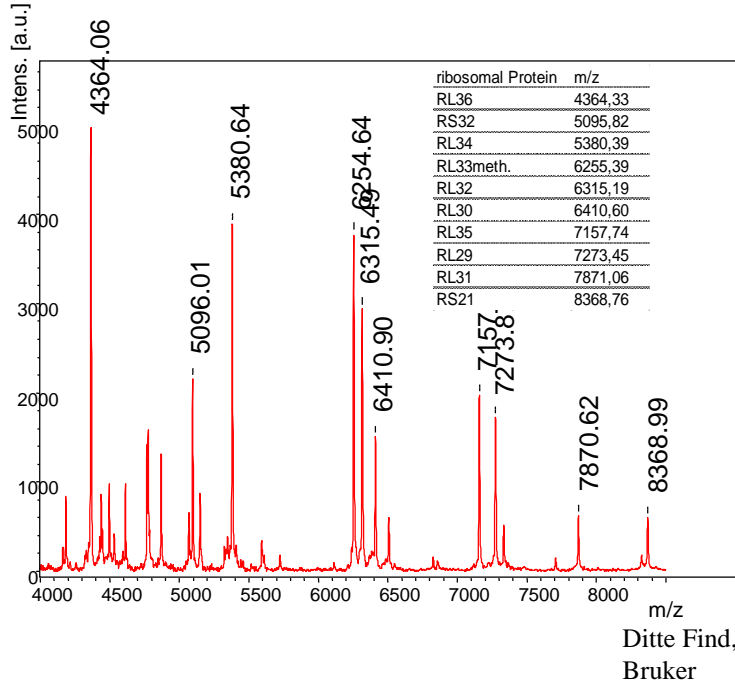


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Modified from: Lottspeich, Zorbas, eds  
“Bioanalytik”, Spektrum Akademischer Verlag,  
1998  
Ditte Find, Bruker



# MALDI –TOF MS



Eksisterende database



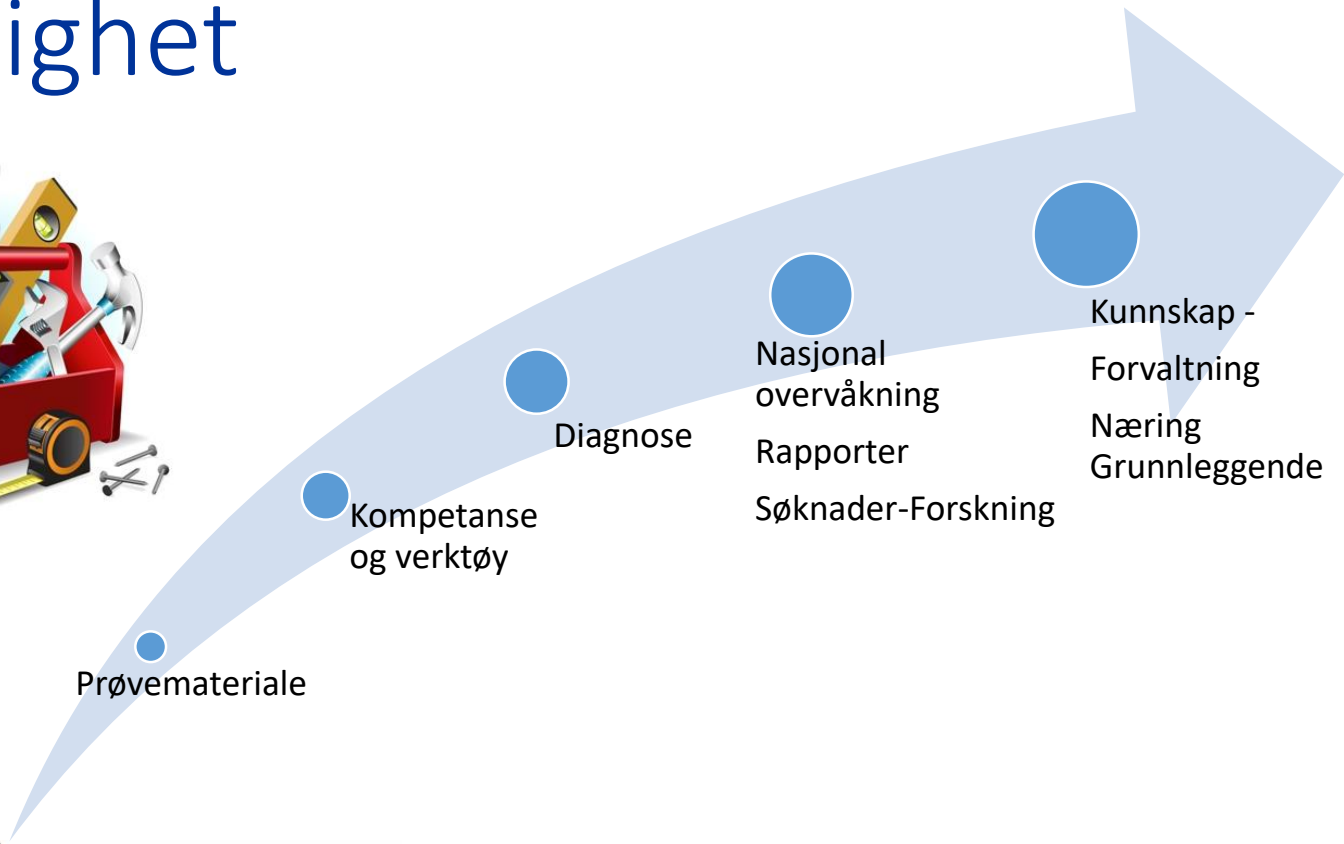
Fiskebakterier



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# Mulighet



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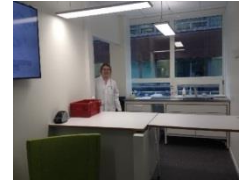
# Takk for oppmerksomheten



Obduksjon på bakkeplan



Glade medarbeidere



Prøvemottak



Sent/tidlig ute ?



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