

REPAMO : a surveillance tool for mollusc health

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 Community Reference Laboratory for diseases of bivalve molluscs

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REseau de PATHologie des MOllusques

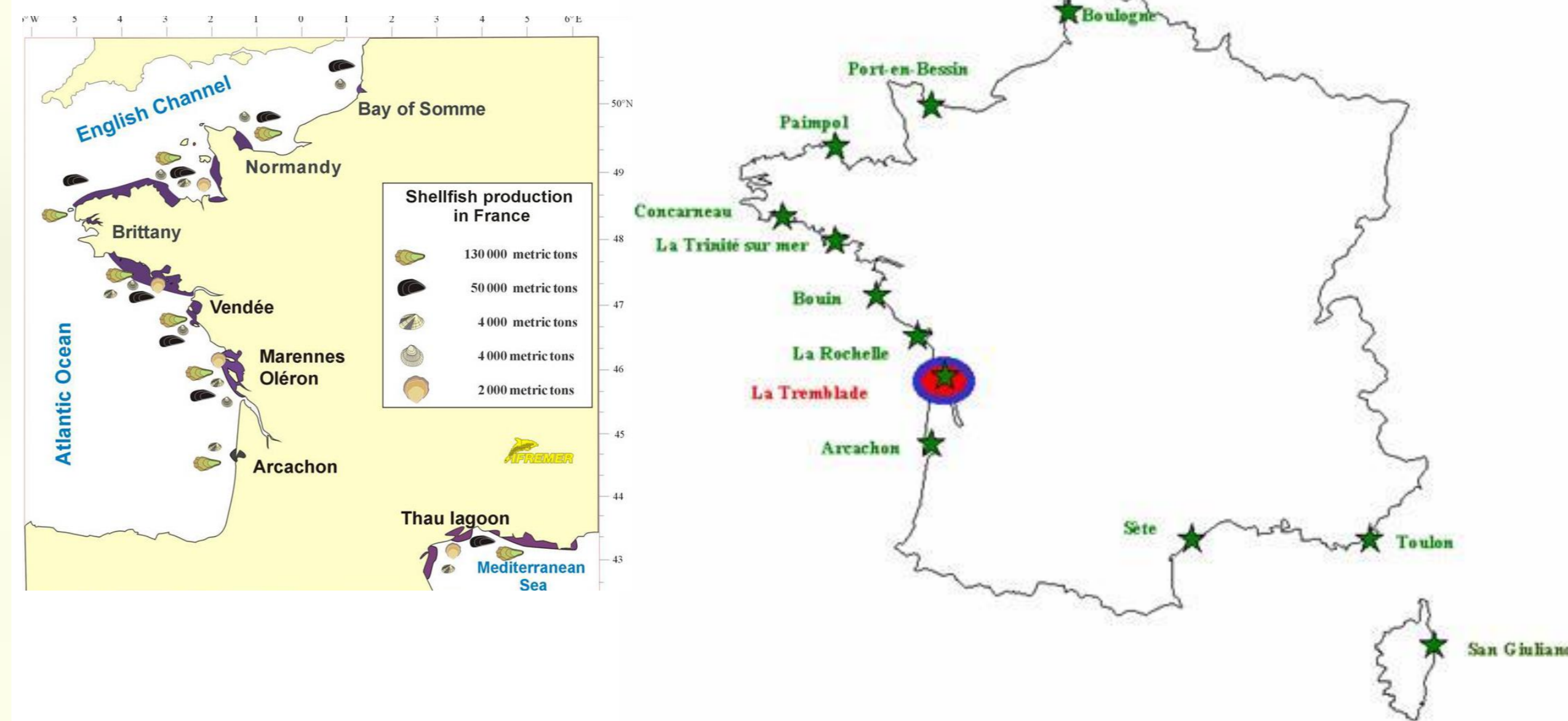
Created in 1992 by Ifremer, the REPAMO network carries on the survey of shellfish health status along French coasts :

The missions of the network are :

- ① the surveillance of listed diseases present in France : Infection with *Bonamia ostreae* and Infection with *Marteilia refringens*,
- ② the study of abnormal mortality,
- ③ the surveillance of health status of cultured and natural populations of molluscs.

Organisation of the network:

A network adjusted to the French shellfish production.



[REPAMO correspondents](#)
20 ifremer agents

[Administrators of REPAMO database](#)
2 ifremer agents

[REPAMO Coordination team](#)
5 ifremer agents

[Genetics and Pathology Laboratory](#)
14 ifremer agents

[Network partners:](#)
- Competent Authority : Marine Affairs (DPMA)
- Shellfish farmers

① Surveillance of bonamiosis and marteiliosis

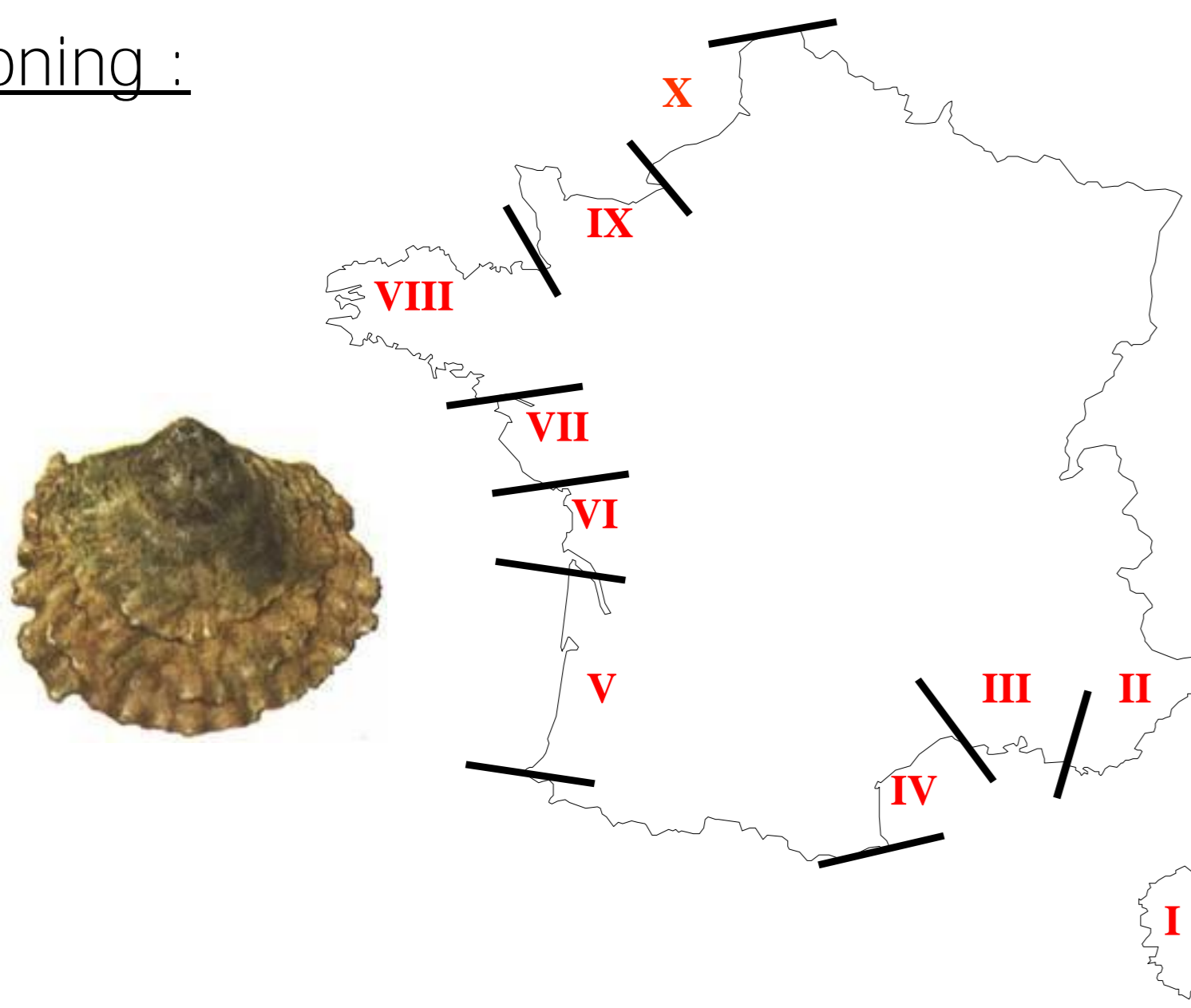
Active surveillance

Objective :

Surveillance of two infections listed in Directive 91/67/CEE (annexe A : non-exotic diseases) and in the OIE Aquatic Animal Health Code :

- **Infection with *Bonamia ostreae***,
 - **Infection with *Marteilia refringens***,
- affecting flat oysters *Ostrea edulis*.

Zoning :



The french zoning has been approved by the European Commission (Decision 94/722/EC). The criteria selected for the delimitation of the zones are :

- ⇒ Importance of production and transfers
- ⇒ Geography / hydrology
- ⇒ Administrative structure
- ⇒ Pathology data

② Study of abnormal mortality

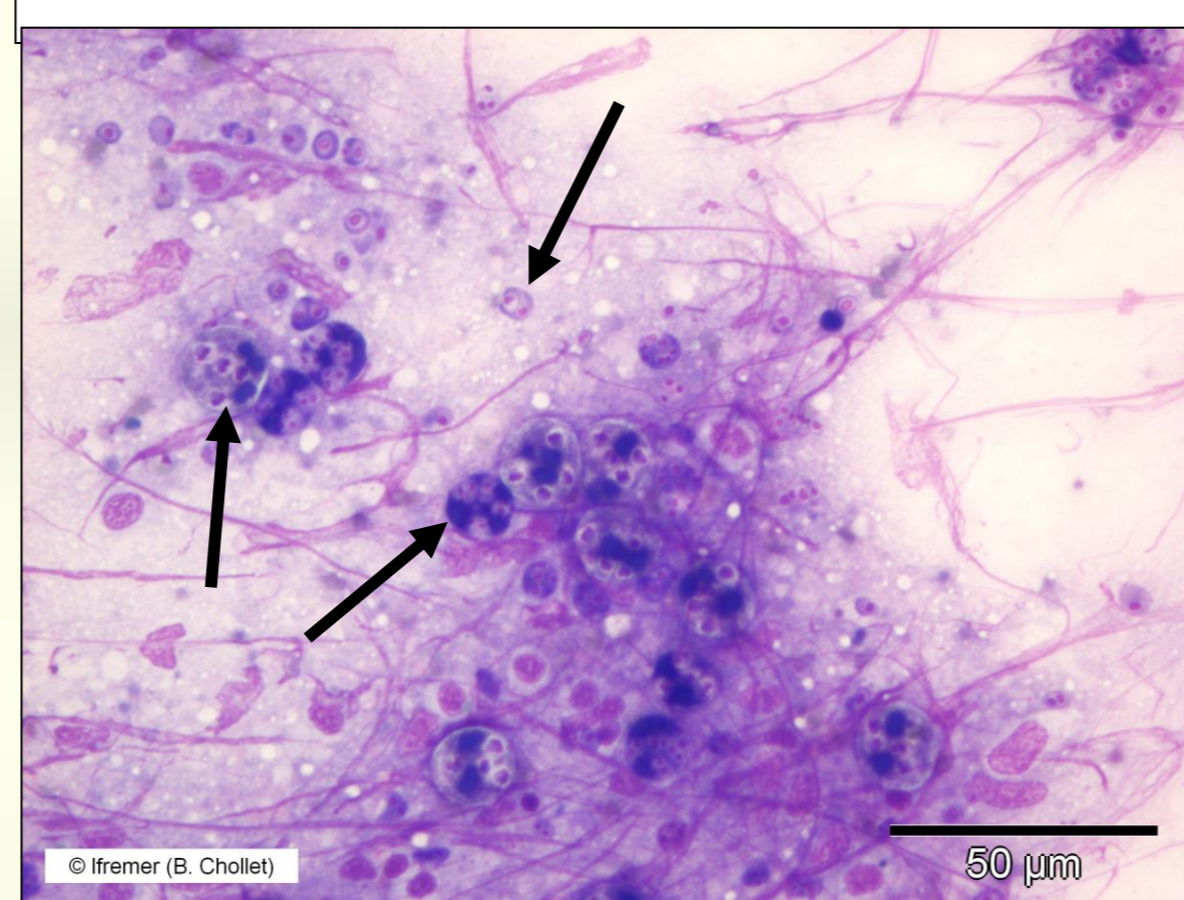
Passive surveillance

Objectives :

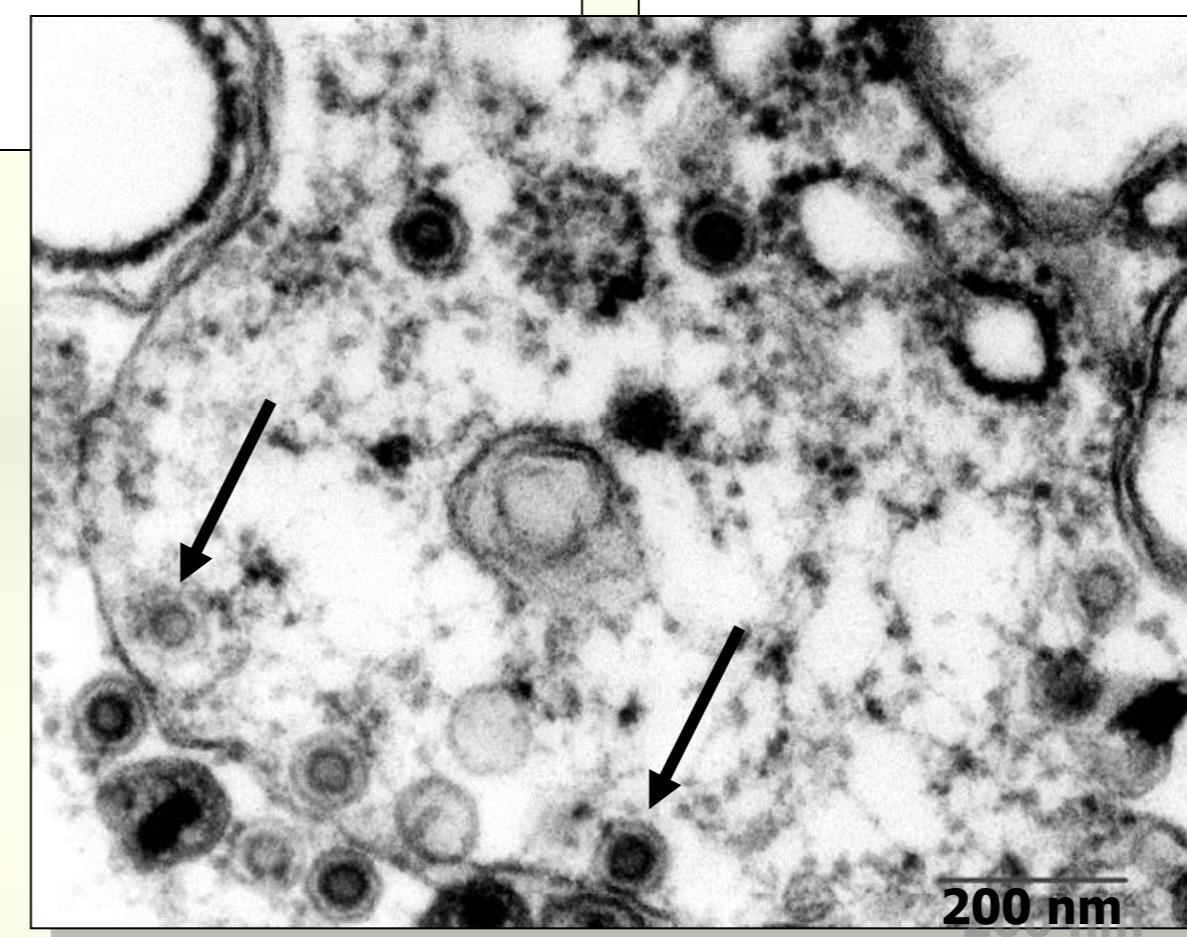
- Turn down or confirm an infectious hypothesis, when mortality occurs.
- Prevent introduction and spread of exotic and non-exotic diseases (annex D of Directive 95/70/EC, annex A of Directive 91/67/EEC, Aquatic Animal Health Code of OIE).

According to Directive 95/70/EEC, **abnormal mortality** means : "...Mortality affecting approximately 15 % of stocks and occurring over a short period between two inspections (confirmed within 15 days)..."

⇒ In practice, diseases and mortality are reported by the farmers to the Competent Authority who refers to REPAMO.



Digestive gland imprints from Flat oyster *Ostrea edulis* showing the protist *Marteilia refringens*



Transmission electron micrograph of Herpesvirus OsHV-1 infected cells from Pacific oyster larvae *Crassostrea gigas*.



Culture (DMEM/Ham's medium) of *Perkinsus olseni*, a protist affecting Carpet shells *Ruditapes philippinarum* and *R. decussatus*.

③ Surveillance of the health status of natural and cultured molluscs

Active targeted surveillance

Objective :

Collect information on the **health status of the exploited shellfish outside crisis situation** (mortality).

Considering the great number of shellfish species commercially exploited, REPAMO organizes 2-3 years **studies on selected host –pathogen couples** :

2003-2005 : *Perkinsus olseni* in *Ruditapes* sp.

2006 : *Marteilia* sp. in *Mytilus* sp.

Sampling and diagnosis :

- The sampling strategy is developed by the REPAMO coordination team, inspired by the recommendations of the OIE Manual of Diagnostic Tests for Aquatic Animals. REPAMO correspondents are in charge of the collection of information and samples.
- Samples are tested at the Genetics and Pathology Laboratory, using reference diagnostic methods. The choice of the appropriate diagnostic methods employed relies on the context, the pathogens species and the shellfish age.

REPAMO database

- Every data regarding sampling and tests are recorded in a specific and confidential database.

Relation with the Competent Authority and the shellfish farmers :

- The REPAMO database allows to produce synthesis with different levels of details for the Competent Authority and for shellfish farmers. Results of the surveillance are also available in various forms (annual report, mail-list, presentations during the REPAMO annual meeting).
- REPAMO activities are evaluated every year in coordination with the Competent Authority, according to regulation, scientific knowledge and socio-economical context.

Repamo is a flexible surveillance tool :

- ⇒ to answer regulation requirement
- ⇒ to prevent the introduction and spread of exotic diseases inside the different areas of French production
- ⇒ to study the impact of pathogens already present and to survey their evolution.
- ⇒ to bring a better knowledge on mollusc diseases present in France