

# Biosensors for the detection and monitoring of *Alexandrium minutum* along the French coasts.

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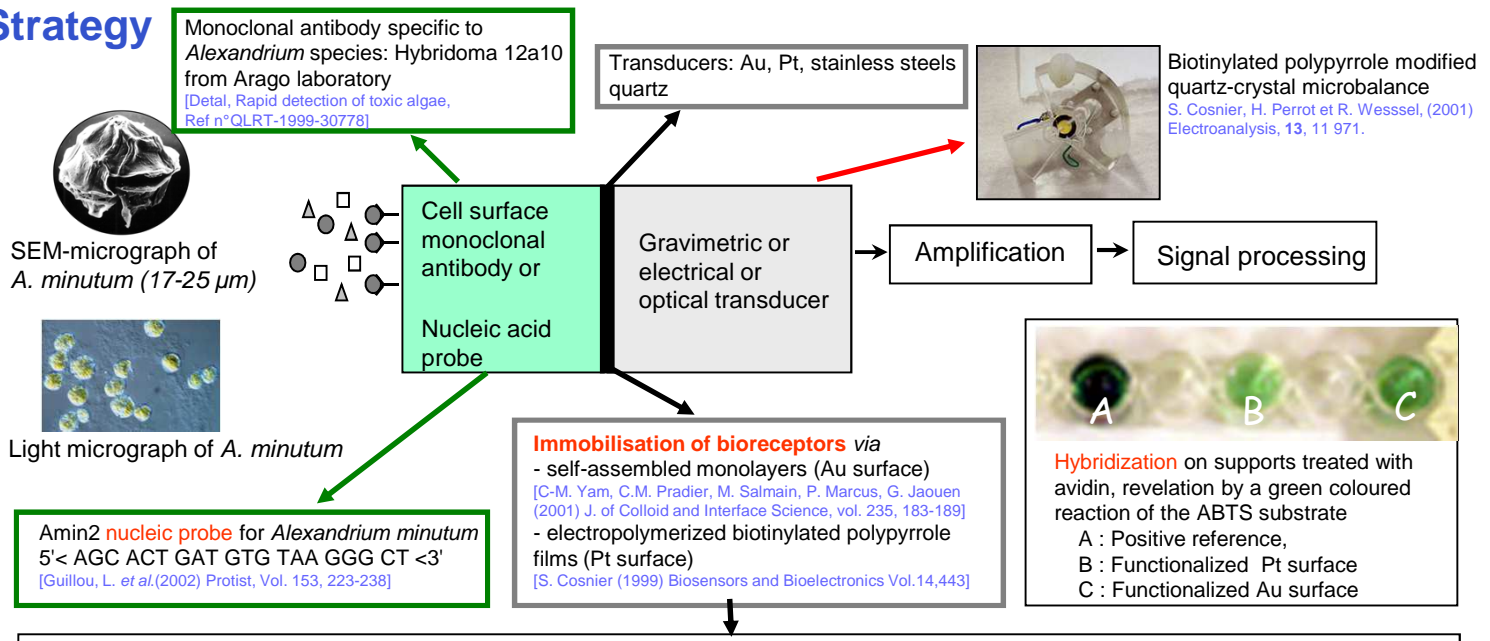
## Introduction

The microalgae *Alexandrium minutum* produces neurotoxins responsible for paralytic shellfish poisoning, which upon accumulation in shellfish represent a human health risk. This species recurrently forms toxic blooms in the Northern part of the French Brittany coast. At present, algae identification relies on tedious microscope observations mostly performed by skilled taxonomists in laboratories. Newly emerging fields of molecular taxonomy, nanoscale technology and biotechnology offer opportunities for the development of **in situ biosensors for the detection and the monitoring of toxic algae.**



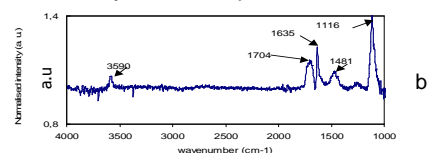
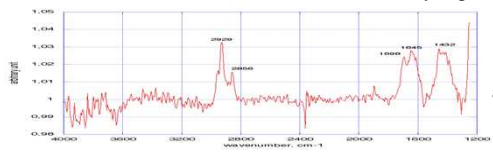
REPHY monitoring network along the French coasts  
Maximum of *Alexandrium* cells/l between 1999-2001  
<http://www.ifremer.fr/envlit/surveillance/rephy.htm>

## Strategy



The **characterization of the biomolecules immobilisation** is extremely significant to improve the stability and the response of the biosensor

Nature of the molecular groups and their orientation from FT-IRRAS



FT-IRRAS spectrum on functionalized surfaces: a/ Au, b/ Pt

## Conclusions

Due to the complexity and to the interdisciplinary nature of such a development, this research requires a collaboration between fields of material science, marine chemistry, microbiology, biochemistry, biology and marine technology. The final goal will be the development of an *in situ* instrumentation for rapid, sensitive and selective *in situ* detection of toxic blooms in the frame of coastal waters monitoring.

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