

Facilities

With state-of-the-art facilities and world-renowned research capabilities, Plymouth Marine Laboratory is the partner of choice in research.

Working with PML provides access to:



- Analytical Facilities
- Artificial environments
- Earth Observation & Modelling
- Flow Cytometry
- Molecular Biology
- Optics
- Research Vessels

PML's facilities include major infrastructures such as research vessels and sea water systems, for large-scale experimental programmes and creating artificial environments for scenario-setting experiments.

Modern analytical facilities along with the latest systems for measuring and calibrating in-water optical properties for airborne and satellite remote sensing are available.

The laboratories are equipped to sustain the very latest approaches in marine microbial and molecular biosciences.

Mesocosms



Over 300m² of modern wet laboratory facilities allowing virtually any aquatic environment to be created under laboratory controlled conditions.

The PML Sea Water Hall facility, with adjacent laboratories, enables scientists to conduct research under controlled conditions designed to mimic those found in estuarine, coastal and oceanic environments.



The PML mesocosm hall is a spacious temperature controlled facility with a range from 7°C to 20°C, providing the flexibility to carry out a wide range of experimental work.

The hall includes an ocean acidification experimental system as well as a separate culture room with independent temperature control, and an adjacent laboratory.

Research Vessels



PML runs two robust and versatile MCA Workboat 2 research vessels, the Plymouth *Quest* and MBA *Sepia*.

The research fleet enables biological, chemical and physical sampling, trawling, hauling, dredging, towing, equipment deployment and oceanographic measurements.

Plymouth *Quest* - Operates 4-5 days and up to 60 miles from a safe haven, carries 12 passengers and 3 crew.

MBA *Sepia* - Operates as a dayboat, up to 60 miles from a safe haven, carries 12 passengers and 3 crew.

Analytical Capabilities



Analytical facilities include, analytical flow cytometry, Elemental Isotope Ratio MS, LC & GC mass spectrometry, high pressure liquid chromatography, elemental analysis, low level nutrients

capabilities, ultra-clean work-up laboratories along with the latest systems for measuring and calibrating in-water optical properties.

Molecular Biology

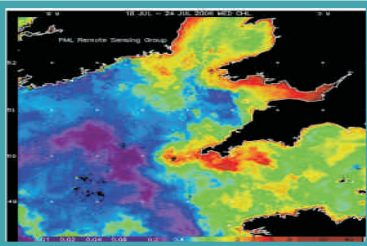


At its core PML has developed a state-of-the-art molecular biology facility (MBF).

Capabilities include: DNA, RNA and protein isolation from environmental

samples; fluorescence and colour detection; PCR and real-time PCR; mutation detection; genotyping; DNA sequencing and microarray analysis.

Earth Observation & Modelling Suites



PML remote sensing data processing and analysis includes near-real time processing and a global coverage capability, usually same day as reception, through agreements with ESA and NASA.

A large archive of data products for temporal analyses with web-based image analysis and browsing tools available. Computer models of marine systems at scales ranging from individual cells to whole oceans. Models developed by PML concern ecosystems and their biological and chemical components along with estuarine hydrodynamics.

Optics



PML's facilities enable quantitative and qualitative Earth Observation of the atmosphere and ocean by making quality assured optical measurements and by developing novel

technologies for validating novel algorithms and models. All of our measurements are quality assured by the PML optical calibration facility, which maintains NIST traceable standards for spectral irradiance, absorption and wavelength.

Flow Cytometry



PML has been involved in the development of flow cytometry and its application in marine science for 20 years.

Advantages of using Analytical Flow Cytometry include the

capability of measuring more than 1,000 cells each second; analysing cell types as small as 1/1000th of the width of a human hair; discriminating different characteristics of cells such as their size and pigment content; the ability to adapt the technology to measure a wide range of cell and particle types and the equipment can be used at sea such as on board the PML research vessels.

PML has a range of BD FACScan and FACSort flow cytometers which can quantify particles and cells from viruses (100 nm) to microplankton (70 µm) at rates of up to 1,000 particles per second.

The FACSort flow cytometers are able to physically sort particles at rates of up to 300 particles per second; the BD FACS Aria droplet sorter flow cytometer is designed specifically for sorting populations at high speed (10⁴ particles per second) of up to 4 populations simultaneously.



Plymouth - Centre of Excellence in Coastal Marine Science & Technology!