

**PRESS KIT**  
**November 2018**

**Paul Ricard Oceanographic Institute**

**Understanding, explaining and protecting the sea**

France and Europe began waking up to environmental issues in the 1960s, as reports of industrial pollution hit the headlines along with striking images like those of the Minamata disaster in Japan, when hundreds of people were found to have been poisoned by mercury discharged at sea ten years earlier.

Paul Ricard was among the pioneers of environmental protection, speaking out against one of the first cases of industrial pollution in the Mediterranean, the dumping of “red mud” waste into the sea off Cassis (Bouches-du-Rhône).

In 1966, he and Dr Alain Bombard founded a Marine Observatory on Les Embiez island to understand and protect the sea, establishing what was then the only private organisation in Europe to combine scientific research and public awareness-raising for marine protection.

Today, the Paul Ricard Oceanographic Institute is chaired by the founder’s granddaughter Patricia Ricard and remains as committed as ever to the respectful management of the world’s marine resources and natural areas within the broader framework of sustainable development.

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## 1. RESEARCH

The Paul Ricard Oceanographic Institute has its own research centre and scientific staff on the island of Les Embiez in the Var, where research projects are run in partnership with other public and private organisations. The research is aimed at sustainable development in the Mediterranean and includes environmental inventorying and monitoring, biodiversity conservation, endangered and protected species, the study and management of living resources, and innovative solutions for fisheries, aquaculture and maritime activities (nature-based solutions).

### SCIENTIFIC STAFF

- **Nardo Vicente**

Director, Scientific Director. Doctor of Science, Emeritus Professor of biology, Paul Cézanne University of Aix-Marseille III, Member of the Marseille Academy of Science, Humanities and the Arts.

- **Jean-Luc Bonnefont**

Research Director

- **Robert Bunet**

Doctor of Molecular Biology

- **Sylvain Couvray**

Doctor of Marine Biology

- **Rémy Simide**

Doctor of Marine Biology

- **Damien Kirchhofer**

Research assistant

- **Auréli VION**

Research assistant

- **Daniel Rebillard**

Diving and marine equipment manager

- **Yvan Martin**

Consultant, Doctor of Science

## RESEARCH TOPICS & PROGRAMMES

All of the Institute's research programmes, including its fundamental research, provide valuable information about fish stocks, environmental management or biodiversity. This in turn helps managers and decision-makers respond more effectively to current challenges and protect the marine environment, supporting greater resilience and the emergence of a blue economy.

### Biodiversity conservation

The Institute's inventorying and environmental monitoring activities play a key role in biodiversity conservation. One of the Institute's many current programmes is in the Calanque de Podestat in the Calanques National Park near Marseille. Scientists there are assessing how its populations have evolved in response to changes in water quality from improved wastewater and rainwater treatment, enhanced protection since the National Park was established, and climate change across the Mediterranean in general.

A second programme, IchTO, is an inventory of fish in the waters of west Toulon (Var). Located between the Port-Cros and Calanques National Parks, the area is important for natural heritage conservation. The research should provide essential information for authorities in the area and help ensure that fish stocks are sustainably managed.

A third programme is looking at how **Environmental DNA (eDNA)** can be used to monitor marine biodiversity through water sampling. All living organisms leave trace DNA in their environment from their faeces, urine or mucus, and we can use this to identify each species and detect their presence or recent passage. The programme aims to develop a tool for detecting and identifying species, providing data for more precise and sustainable management of the environment.

Researchers at the Institute are also studying endangered and protected species, particularly the ***Pinna nobilis* fan mussel**, the largest shellfish in the Mediterranean, which is currently facing an epidemic of unprecedented proportions. As a protected, endemic species and an indicator of environmental quality, it is the subject of several research programs at the Institute. One of them is **Pinnaspot**, which involves counting and studying the genetics of populations on the Spanish coast, Les Embiez islands and in marine reserves in Monaco and the Kotor ria in Montenegro.

### Environmental restoration

Pollution and habitat destruction negatively impact coastal ecosystems, but if the water quality allows, rehabilitation efforts can encourage flora and fauna to return to the site.

The Brusc lagoon is bordered on one side by Les Embiez island. Because of its heritage value and multiple environmental roles, it was chosen as a pilot site for environmental restoration under the European MSFD Directive. The **SAR-LAB** project (*Site Atelier de Restauration écologique de la Lagune du Brusc*) is currently running several "nature-repairing" experiments in its ports and lagoons.

A second programme, **REMORA**, is an artificial reef experiment aimed at assessing the technical and operational feasibility of full-scale restorative action in an extremely degraded environment. Researchers are **monitoring** the colonisation of 36 artificial reefs of various shapes and sizes submerged near the *Amphitria* wastewater treatment plant at Cap Sicié (near Toulon in the Var).

Although it is one of the most efficient urban wastewater plants in the Mediterranean today, some coastal habitats had already been so damaged before it opened that the quality of the marine environment is still below par.

### **Management of living resources**

Another focus of the Institute's research is the sustainable management of living resources. One example is the **edible sea urchin *Paracentrotus lividus***, a highly sought-after species requiring close monitoring. Working with local fisherfolk, researchers can count, assess and better understand the resource with a view to managing fisheries more sustainably. They are also producing juveniles through experimental breeding, perfecting a technique that could ultimately lead to the establishment of sea urchin farms. Experimental restocking has also been explored in some areas. The Institute's researchers are also working on **integrated multi-trophic aquaculture (IMTA)**, a nature-based solution that involves farming several species together in the same tank so that the waste produced by one species can feed another. By transforming waste into a resource, aquaculture can become more efficient, profitable and environmentally-friendly.

### **Fighting chemical pollution**

Chemical pollution is another field of research at the Institute. The **MARINA** programme is looking at nature-based antifouling solutions as a way to replace conventional products, which cause pollution and are toxic for ecosystems. Our researchers are turning to nature for inspiration and studying natural molecules with the same functions as the paint chemicals. There are many potential applications, since any submerged object can be rapidly colonised. This includes ship hulls but also renewable energy turbines in marine environments, pipelines and port facilities. Meanwhile, the **IPOCAMP** programme on emerging molecules is studying the impact of endocrine disruptors on marine organisms.

Details of all our research programmes are available on the Paul Ricard Oceanographic Institute's website.

## **2. TAKE OFF, TAKE OCEAN FOR FUTURE**

**On June 23rd, 2016, Patricia Ricard, Chair of the Paul Ricard Oceanographic Institute, and Alexandre Ricard, CEO of Pernod Ricard, launched the corporate sponsorship project Take OFF, "Take Ocean For Future". Targeted at young scientific researchers around the world, the project aims to reinforce ocean protection and awareness-raising efforts.**

Supported by Captain Paul Watson, Françoise Gaill, emeritus director of research at the CNRS, Pierre-Yves Cousteau and fashion designer Jean- Charles de Castelbajac, the project supports oceanographic research worldwide with a particular focus on young researchers. Every year, the Institute welcomes foreign students and ultimately aims to become a kind of Villa Medici for the Mediterranean, offering fellowships to research students from all over the world.

### **Continued awareness-raising**

*Take Ocean For Future* has another role, which is to serve as a convening platform for researchers,

businesses, NGOs, institutions and the general public. This echoes one of the original goals of the Institute's founder: to create and build greater awareness of major issues facing "our" Mediterranean Sea and all the world's oceans.

Patricia Ricard: *"To tackle climate change and the threats our environment is facing, it is time for science and research to move beyond disciplinary, national and cultural boundaries."*

### **Exchange agreement**

On July 9th, 2016, the Institute's chair Patricia Ricard and Kim Yun-hae, Dean of the National Korea Maritime and Ocean University, signed an agreement to strengthen an exchange programme that began in 2013. The agreement operates via Pernod Ricard's Korean subsidiary and provides for shared research programmes, fellowships and exchanges.

In 2017, Dr. Jin-Woo Lee from KMOU received the first fellowship at Les Embiez, where he worked with Dr Robert Bunet on the antifouling properties of marine organisms. They tested various antifouling molecules, researching alternatives to the toxic antifouling paint currently used on boat hulls.

In its second year, Take OFF supported Bok Il Jang, a young researcher from the National Korea Maritime and Ocean University (KMOU) specialised in aquatic animal nutrition. He spent six weeks at the Institute studying the feeding of farmed species and options such as insect meal as alternatives to fishmeal, which is produced from wild fish and contributes to overfishing. If we are to feed the planet in the future, we need new approaches that eliminate the pollution generated by conventional aquaculture and create a virtuous cycle.

## **3. AWARENESS RAISING & INFORMATION**

One of the Paul Ricard Oceanographic Institute's core missions is awareness-raising and public information. Through its public aquarium in Les Embiez, conferences, exhibitions, audiovisual productions, publications, website and social network sites, it provides information for a variety of audiences, always explaining the importance of the ocean and other major environmental issues. This pillar is helping provoke reactions and change behaviours and lifestyles to support a transition towards a more sustainable future.

### **The Mediterranean on display**

Every year, over 25,000 people, including 5,000 schoolchildren, visit the aquarium at the Paul Ricard Oceanographic Institute on Les Embiez island in the Var. It is the only seawater aquarium on the coast between Antibes and Grau-du-Roi. Around a hundred species of fauna and flora from the north-western Mediterranean are displayed in some twenty tanks where various marine biotopes are represented. As well as playing an educational and informative role, the aquarium is a scientific resource where the Institute's biologists can study the behaviour and reproduction of certain species for example.

## Public events

The Paul Ricard Oceanographic Institute has been organising the lecture series *Les Mercredis de la mer* on Les Embiez since 1990.

It holds exhibitions on various topics, mostly related to the Institute's own research. One of them is an interactive multimedia exhibition on the quayside at Les Embiez harbour. "*Plongée au coeur de la Méditerranée, Océan miniature, Océan modèle*" is a series of 15 multimedia panels with videos, interviews, and audio content accessible via smartphone and tablet. Another example is the interactive photo exhibition "*Récifs coralliens, un enjeu pour l'humanité*" co-produced by Alexis Rosenfeld and Alexie Valois, which opened at UNESCO Headquarters on June 5th, 2018 to mark World Oceans Day and the International Year of the Reef.

The Institute also partners with major cultural events such as Science Frontières. Its scientists take part in trade shows, festivals and forums, and speak about their work at popular science conferences and symposia.

The Institute produces several thousand copies of its newsletter (*Lettre d'information de l'Institut océanographique Paul Ricard*), which reports on its activities and contains feature articles on key topics such as marine protected areas, biomimicry, water access for all, oceans and climate, ocean governance etc. (visit [www.institut-paul-ricard.org](http://www.institut-paul-ricard.org) to read the newsletter).

There are also videos about the Institute's research and on environmental issues in general. These include *Programme Oursin, Biodiversité, Nouveaux enjeux du littoral, Océan et Climat...* (Visit [www.institut-paul-ricard.org](http://www.institut-paul-ricard.org) to view the videos).

All the information on the Paul Ricard Oceanographic Institute's website is published as open data, giving free access to knowledge in the form of publications, documentaries and scientific articles. The Institute has a strong social media presence and created an online newsletter (*Océanorama*) in 2001.

## Ocean advocacy

As spokesperson for the Ocean & Climate platform, Patricia Ricard, Chair of the Paul Ricard Oceanographic Institute, has become a global advocate for ocean protection.

#### 4. BIOGRAPHY OF PATRICIA RICARD



Patricia Ricard has been actively involved in environmental protection for over 30 years and became chair of the Paul Ricard Oceanographic Institute in 2005. Like her grandfather and founder of the Institute before her, her focus is always on sustainable development and the public interest.

Today, Patricia Ricard places particular importance on global advocacy. While research and scientific knowledge are a prerequisite for sustainable ocean governance, real progress can only happen if decision makers are informed and convinced.

She has relayed the work of the Institute's researchers at major international conferences such as the United Nations' Ocean Conference and at climate CoPs, which she has also addressed as spokesperson for the Ocean & Climate platform. She is dedicated to ocean advocacy, reminding leaders that "oceans must be at the heart of member states' decisions", and that nature-based solutions and ecosystem services are key to successful climate change adaptation and mitigation.

2018	<ul style="list-style-type: none"> <li>- Coordinator of the Blue Belt initiative's roadmap for African fisheries</li> <li>- Pro bono contributions to the transition strategies of various large corporations in a number of sectors (agri-food, shipping, metals and water treatment)</li> </ul>
2017	<ul style="list-style-type: none"> <li>- Vice President and spokesperson of the Ocean &amp; Climate platform</li> <li>- TEDx Marseille</li> </ul>
2016-2017	<ul style="list-style-type: none"> <li>- UN Ocean Conference side event</li> </ul> <p>Having spoken on fisheries in 2016, she returns to address the conference in 2017 as a member of the French delegation.</p> <ul style="list-style-type: none"> <li>- Auditor at the Mediterranean Foundation of Strategic Studies</li> </ul>
2015	<ul style="list-style-type: none"> <li>- Rapporteur to the CESE (the French Economic, Social and Environmental Council) on biomimicry and sustainable innovation.</li> </ul> <p>The report "<i>Le biomimétisme, comment s'inspirer de la nature pour innover durablement</i>" is unanimously adopted.</p> <ul style="list-style-type: none"> <li>- TEDx Sorbonne</li> </ul>

2013-2014	<ul style="list-style-type: none"> <li>- Founding member of CEEBIOS, the European Centre of Excellence in Biomimicry at Senlis (2014)</li> <li>- Board member of the Véolia Foundation (2014)</li> <li>- Founding member of the Ocean &amp; Climate platform (2014)</li> <li>- Becomes a lieutenant-commander in the volunteer reserves of the French Navy, attached to the Naval Academy in Paris (2013)</li> </ul>
2011-2012	<ul style="list-style-type: none"> <li>- Board member of the Société des Eaux de Marseille (2012)</li> <li>- Member of the French national parks board (<i>Établissement public des Parcs Nationaux de France</i>) (2011)</li> </ul>
2009-2010	<ul style="list-style-type: none"> <li>- Member of the specialised commission on environmental terminology and neologisms established by the French Ministry of the Environment (2010)</li> <li>- Appointed to the CESE (the French Economic, Social and Environmental Council) as an environmental specialist (2010)</li> <li>- Member of the advisory board for the French Southern and Antarctic Lands – TAAF (2009)</li> <li>- Participates in the <i>Grenelle de la Mer</i> Group 3 and in the operational committee on research (2009)</li> </ul>
2007-2008	<ul style="list-style-type: none"> <li>- Hosts radio shows on <i>Radio de la Mer</i> and <i>Radio France International</i> (RFI)</li> <li>- Technical advisor on sustainable development for the meeting of the Var chambers of commerce (2008)</li> <li>- Board member of WWF France (2008)</li> <li>- Board member of the Institut Européen d'Ecologie (2007)</li> </ul>

1998-2001	Presenter of a weekly 52-minute programme on nature and the environment on the channel <i>Planète Forum</i>
1995-2008	Creates, launches and presents the programme <i>Vert de Terre</i> on the channel MCM.
From 1992	<ul style="list-style-type: none"> <li>- Chair and moderator of many documentary film festivals about human sciences and the environment</li> <li>- At the World Economic Forum in Davos, Switzerland in 1999, she presents a selection of industrial films on environmental issues well before others took up this theme</li> </ul>
1991	Creates the " <i>Mardis de l'Environnement</i> " with Marie-Pierre Cabello, a monthly conference cycle which she would chair and moderate until 2016. It is a discussion forum for experts and environmental stakeholders.
1986	Patricia Ricard joins the board of the Paul Ricard Oceanographic Institute, founded in 1966 by her grandfather Paul Ricard, an industry leader and environmentalist ahead of his time. The Institute's mission is understanding, explaining and protecting the sea. She has been its Chair since 2005.

### **Honours awarded to Patricia Ricard:**

- French Legion of Honour (2013)
- French Order of Maritime Merit (2010)
- French Order of Merit for the Environment (2007)

## **5. THE INSTITUTE: 50+ YEARS OF HISTORY**

### **• 1963**

#### THE "RED MUD" SCANDAL

Plans for a pipeline to dump waste ("red mud") from bauxite processing into the sea off Cassis near Marseille cause an outcry among politicians, civil society and prominent figures. Paul Ricard joins forces with Dr Alain Bombard to fight one of the first cases of industrial pollution in the Mediterranean, but the project is deemed to be in the public interest and given the go-ahead.

### **• 1966**

#### ESTABLISHMENT OF A MARINE OBSERVATORY

Paul Ricard establishes the Marine Observatory for "understanding, explaining and protecting the sea "

### **• 1972**

#### A RESEARCH TEAM IS FORMED

Prof. Nardo Vicente of the University of Marseille-Saint-Jérôme's science faculty puts together a team of scientists to work on Les Embiez island in the Var.

### **• 1973**

#### OPENING OF THE PUBLIC AQUARIUM

Opening of a public aquarium on Les Embiez. With 50,000 visitors per year, it is the third busiest aquarium on France's Mediterranean coast after Banyuls-sur-Mer and Monaco.

### **• 1974**

#### LAUNCH OF THE NEWSLETTER

The newsletter starts as the "Bulletin de l'Observatoire de la mer" then becomes "Océanorama" (1986) and then "La Lettre d'information".

### **• 1979**

#### URBAN WASTE

The microbiology team begins to focus more specifically on coastal water quality, researching the ability of faecal bacteria in urban effluent to survive in the marine environment, ultimately leading to better positioning of wastewater outfalls to limit pollution.

#### FUTURISTIC VISION OF OUR RELATIONSHIP WITH THE SEA

Launch of the roaming exhibitions *Habiter la mer* (1979 -1985) then *Vivre avec la mer* (1986-1998) by architect Jacques Rougerie. The exhibition panels and models are viewed by over a million visitors.

#### LAUNCH OF THE SCIENTIFIC JOURNAL "VIE MARINE".

### **• 1980**

## “POLLUTIONS ET NUISANCES SUR LE LITTORAL MÉDITERRANÉEN”

by Prof Nardo Vicente, Scientific Director of the Paul Ricard Oceanographic Institute, and filmmaker Christian Pétron. This gripping documentary, filmed at Cap Sicié at the outfall from Toulon's wastewater treatment plant, would help secure the adoption of an Urban Waste Treatment Plan for the Provence-Alpes-Côte d'Azur coastline.

- **1981**

### TREATING OIL SLICKS

The research team helps develop a product for Elf-Aquitaine to accelerate the natural breakdown of oil slicks. Eight years later, it would be successfully used to help clean up Alaskan beaches after the Exxon Valdez disaster.

- **1983**

### EXPERIMENTAL AQUACULTURE TO SUPPORT THE SECTOR

An experimental aquaculture facility is set up on Les Embiez to study the larval development of commercial species like sea bass and sea bream. The first regional training course for installing aquaculture farms is set up.

- **1990**

### CLIMATE CHANGE

The research team designs an experiment to assess how microbial communities in seawater respond to a doubling in the amount of CO<sub>2</sub> in the atmosphere. They study their ability to pump carbon dioxide from the atmosphere, in a pioneering climate change project that would run from 1990 to 1995.

- **1992**

### BIODIVERSITY CONSERVATION

The Paul Ricard Oceanographic Institute helps obtain protected status for the Mediterranean fan mussel. It joins forces with the GEM (*Groupe d'étude du mérrou*) and a moratorium on the spearfishing of grouper comes into force in 1993.

- **1995**

### GRAND PRIX DE L'ACADÉMIE DES SCIENCES.

The Paul Ricard Oceanographic Institute is awarded the Grand Prix de l'Académie des Sciences for its work on oil slick response.

- **2002 - 2005**

### WATER QUALITY AND THE IMPACT OF HUMAN ACTIVITIES

The research team joins the European Programme I-Marq (Information on marine environment quality), working alongside some ten other European laboratories to develop a real time system for analysing coastal water quality.

- **2007 - 2011**

### CETACEANS AND WWF

The Paul Ricard Oceanographic Institute and WWF France form a scientific partnership for the study of Mediterranean cetacean populations, the impact of pollution on marine life, and sustainable tourism.

- **2008**

#### SPIRULINA AND FIGHTING MALNUTRITION

The Roquette Group launches “AlgoHub”, a European programme for the production of microalgae. The Paul Ricard Oceanographic Institute is one of fifteen partners studying the nutritional properties of spirulina, testing various production techniques, monitoring the purity and stability of the microalgae crops and testing for contaminants. The goal is to help fight malnutrition in developing countries like Madagascar.

- **2009**

#### AN EXPERIMENTAL HATCHERY FOR CONSERVING MARINE BIODIVERSITY

Jean-Louis Borloo, the French Minister of the Environment and Sustainable Development, officially opens the experimental hatchery on Les Embiez island (Var). The hatchery produces various species of particular economic or heritage importance: sea urchins, seahorses, fan mussels etc. In 2011, the Paul Ricard Oceanographic Institute and the Caisse d’Épargne Côte d’Azur win the first Environmental Corporate Sponsorship Award for the project.

- **2014**

#### CREATION OF THE OCEAN & CLIMATE PLATFORM

The Paul Ricard Oceanographic Institute is one of the platform's founding members. Its goal is to ensure that oceans are placed front and centre at international climate conferences. The COP21 Paris Agreement in 2015 is a victory for the Platform.

#### CHEMICAL POLLUTION & NATURE-BASED SOLUTIONS

An innovative biological engineering study develops ways to test the effectiveness of natural antifouling products, specifically molecules extracted from algae that exhibit promising antifouling properties.

- **2016**

#### Launch of TAKE OFF- TAKE OCEAN FOR FUTURE

A corporate sponsorship project designed to help young researchers around the world to better protect our Oceans.

- **2017**

PATRICIA RICARD becomes spokesperson of the Ocean & Climate platform.

### **PRESS CONTACT**

[presse@institut-paul-ricard.org](mailto:presse@institut-paul-ricard.org)

+ 33 4 94 34 02 49