

# PRESCILLA PERRICHON

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## FIELDS OF RESEARCH

Environmental risk assessment, aquatic ecotoxicology, fish bioassays (turbot, zebrafish, medaka, killifish), organic pollutants (PAHs), crude oil, detoxification process, genotoxicity, growth, developmental physiology, validation of bioindicators and biomarkers.

## 1. EDUCATION

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- 2010-2014**                    **Ph. D. in Aquatic Ecotoxicology**, with the highest honors (awarded on February, 21<sup>st</sup> 2014).  
French Institute for Exploitation of the Sea (IFREMER)/University of La Rochelle  
*Specific courses: Intellectual property; Guidelines for writing scientific publications; Animal health and welfare legislation.*
- 2008-2010**                    **M.S. in Marine Ecology and Biology**  
Mediterranean Institute of Oceanography/University of Aix-Marseille II (FR)  
*Specific courses: Organic pollutants and hydrocarbons; Ecotoxicology, Natural and human perturbations; Adaptive strategy of marine organisms; Marine resources I and II; Modelisation.*
- 2005-2008**                    **B.S. in Science of Life, speciality Marine Ecology and Biology**  
University of La Rochelle (FR).  
*Specific courses: Animal and vegetal physiology; Marine biology; Developmental biology; Organic chemistry; Biochemistry; Oceanography; Biostatistics.*
- 2005**                            **Scientific High School Diploma, speciality Ecology and Agronomy**  
LEGTA High School of Vendôme (FR)

## 2. RESEARCH EXPERIENCE

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- 2014**  
**(7 months)**      **Cellular Imaging Engineer / Imaging Platform Manager:**  
LIENSs laboratory, University of La Rochelle (FR).  
Advisor: Dr. [Nathalie IMBERT-AUVRAY](#)  
*Keywords:* *Fish cardiomyocytes, dissociation, staining/immunostaining (DAPI, phalloidin, ryanodine receptors, di-8-ANEPPS), MitoTracker, calcium homeostasis, comet assay.*
- 2010-2014**  
Project co-financed by the General Council of the Charente Maritime (FR17) and IFREMER:  
**Ph. D. Research: DEVELOPMENT OF EMBRYO-LARVAL ASSAYS TO PREDICT EARLY AND LATER TOXIC EFFECTS OF HYDROPHOBIC SUBSTANCES**  
Collaboration with the Biogeochemistry and Ecotoxicology Laboratory (IFREMER, l'Houmeau, FR) and the LIENSs Laboratory (University of La Rochelle, FR).  
*Keywords:* *PAH, zebrafish, Japanese medaka, sediment, water-accommodated fractions of oil, trophic exposure, offspring, multimarkers approach (PAH-metabolites, gene transcription, comet assay, EROD, heartbeat, photomotor behavioral response and morphological analysis), survival.*  
Advisor: Prof. [Paco BUSTAMANTE](#)
- 2011**  
**(2 months)**      **Research Assistant: GENOTOXICITY OF CONTAMINATED SEDIMENT ON EARLY LIFE STAGES OF ZEBRAFISH (*DANIO RERIO*)**  
Institute for Environmental Research, RWTH Aachen University (DE).  
Grant : COST Action - STSM « Short-Term Scientific Mission »  
Advisor: Dr. [Steffen KEITER](#)  
*Keywords:* *Comet assay, in vitro EROD activity, sediment extracts, sediment contact exposure.*
- 2010**  
**(6 months)**      **M.S. Research Trainee: IMPACT OF CONTAMINATED SEDIMENT ON PHYSIOLOGICAL PERFORMANCE AND BIOMARKER RESPONSES IN JUVENILE TURBOT (*SCOPHTHALMUS MAXIMUS*)**  
Laboratory of Oceanology and Geoscience, Research Center in Natural Environment (MREN-LOG), Wimereux (FR).  
Advisor: Prof. [Rachid AMARA](#)  
*Keywords:* *Harbour, sediment, heavy metals, survival, growth/condition, otolithometry, lipid content, RNA:DNA.*
- 2008**  
**(1 month)**      **Research Assistant: SPECIES IDENTIFICATION (ANNELIDS, CRUSTACEANS)**  
Environment of Atlantic Coasts Laboratory (ELA), IFREMER, L'Houmeau (FR)
- 2008**  
**(2 months)**      **B.S. Research Trainee: RESPONSE OF BENTHIC POPULATIONS TO ORGANIC MATTER ENRICHMENT BY MUSSELS (*MYTILUS EDULIS*) CULTURE IN PERTUIS BRETON (VENDÉE, FRANCE)**  
ELA Laboratory, IFREMER, L'Houmeau (FR)  
Advisor: Dr. [Pierre-Guy SAURIAU](#)  
*Keywords:* *annelids, abundance, biotic indicators, validation of reference areas.*
- 2006**  
**(3 months)**      **Research Trainee: BACTERIVORY QUANTIFICATION OF BENTHIC MEIOFAUNA USING <sup>15</sup>N-ENRICHED BACTERIA**  
Research Center for Coastal Ecosystems, La Rochelle, (FR)  
Advisor: Prof. [Christine DUPUY](#)  
*Keywords:* *nematods, foraminifer, hydrobia ulvae, grazing, abundance*

### 3. SCIENTIFIC SKILLS

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#### **ZOOTECHNY**

Veterinary certificates “Vet’Eau”, awarded by the Veterinary Clinic SELARL of Dr. Alain LE BRETON (2011 and 2012): Fish biology and health (diagnostic, treatment).

**Animal Experimentation Authorization** (2011, National Veterinary School ONIRIS, Nantes, FR)

Fish husbandry techniques.

Fish tagging: IV alpha tags.

Blood and organs sampling (sea bass, turbot, trout, medaka, zebrafish, killifish)

Otolithometry.

Fertilization of sea urchin.

#### **MOLECULAR BIOLOGY/BIOCHEMISTRY**

Nucleic acid extraction (RNA, DNA).

PCR, RT-PCR.

Electrophoresis migration on agarose gel and glass slides.

*In situ* hybridization on fish embryos.

Comet assay (DNA damages).

EROS enzymatic activity (*in vivo* et *in vitro*).

Lipid extraction.

Spectrofluorimetry.

Preparation, storage and traceability of biological samples (lyophilization, storage in liquid nitrogen, RNA later, paraformaldehyde..) function of the analytical technique used.

#### **IMAGING**

Staining/immunostaining on cells (cardiomyocyte) and embryos/larvae of fish.

Fluorescence Microscopy.

Acquisition and imaging analysis: MorphoStrider (ExploraNova), Visilog TNPC, Komet6, IC Capture, ImageJ, VitrualDub.

Acquisition and video analysis (cardiac activity, swimming behavior of fish): Noldus Ethovision.

#### **PHYSICO-CHEMICAL TECHNIQUES/ORGANIC CHEMISTRY**

Particle size-analyzer of sediment.

Sediment and food spiking with PAHs (rotavapor).

SPME/GC-MS for the oil and PAHs characterization in water samples.

Introduction to the ICP-AES for heavy metals speciation.

#### **BIOSTATISTICS**

Laws of probability.

Parametric and Non-parametric tests.

Analysis of variance.

Multivariate analysis (PCA)

Software: Statistica, GraphPadPrism and XLSTAT.

#### **OTHERS SKILLS LINKED TO FIELDS SAMPLING**

Trawl and fishermen landings surveys technician (Obsmer project, IFREMER): identification and measures of Atlantic species (fish, cuttlefish, jellyfish) landed.

Sampling sediment (Van Veen sampler) and water (Niskin bottles).

#### **LANGUAGES**

**French** (native), **English** (Read, Spoken, Written, scientific vocabulary), **Spanish** (Read, Spoken, Written).

## 4. RESPONSABILITIES AND SUPERVISION

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### IMAGING PLATFORM MANAGER OF LIENSs LABORATORY (2014)

- To support, advise and become independent the users (local and external collaborators) to imaging techniques (equipment, software, laboratory techniques: staining/immunostaining).
- Daily maintenance and qualities control of inverted fluorescence microscope and the associated-equipment.
- Inventory management, consumables and products related to the Imaging Platform.
- Preparation of technical notes on the different systems and experimental approaches.

### ANIMAL TECHNICIAN

- Daily maintenance of killifish *N. furzeri* breeding at the LIENSs laboratory of La Rochelle University (2014).
- Daily maintenance of zebrafish and (marine and freshwater) medaka at IFREMER (2010-2013).

### REVIEWER:

- International reviews (2014/2015): *Aquatic Toxicology*, *Environmental Science: Processes and Impacts*, *Chemistry and Ecology*, *Ecotoxicology and Environmental Safety*, *Science of the Total Environment*.
- International Congress: 3<sup>rd</sup> ISGC International Symposium on Green Chemistry, La Rochelle, FR (May 2015).

### STUDENT SUPERVISION

Training, daily supervision and edition of the final report.

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|-------------|---|
| <b>2014</b> | Pablo CABEZAS (Complutense University of Madrid, ES), Ph. D. student (3 months): Formation to the molecular biology techniques in the frame of European collaboration: RNA extraction, electrophoresis migration, spectrophotometry, PCR, RT-PCR. |
| <b>2013</b> | Manon GOUBEAU (University of Bordeaux I, FR), M.S. (2 <sup>nd</sup> year) degree (6 months). <i>Impact of two petrogenic PAH fractions on the reproduction of zebrafish (Danio rerio): consequences for the offspring?</i>                        |
| <b>2012</b> | Flavie METAIS (Technical Institute of La Rochelle, FR), 2 <sup>nd</sup> year (4 months). <i>Impact of individual PAHs on the morphology and detoxification process on early life stages of zebrafish (Danio rerio).</i>                           |
| <b>2011</b> | Romain PROVOST (University of Lyon, FR), M.S. (1 <sup>st</sup> year) degree (2 months). <i>Impact of two PAH models on the photomotor behavioral response of zebrafish larvae.</i>  |

## 5. TEACHING EXPERIENCE AND POPULARIZATION

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### EDUCATION ACTIVITIES:

During this teaching experience, I was able to work with the teaching teams by developing interventions and conferences, supervising student tests, guiding and advising some students in their choice of university education.

- 2013/2014-  
2014/2015**                    **Guest lecturer** in Ecotoxicology (Ph D. degree): *Development of fish embryol- larval assay for toxicity assessment of petroleum hydrocarbons*. Conference in the frame of the Doctoral School, Science for Environment, University of La Rochelle (FR).
- 2011/2012-  
2012/2013**                    **Teaching Assistant** in Cellular Biology (B.S. degree, Sciences of Life): 40 hours, University of La Rochelle (FR).
- 2012/2013**                    **Guest lecturer** in Ecotoxicology (M.S. degree): *Environmental fate and behavior of petroleum hydrocarbons: the example of Erika Oil Spill (1999, Bay of Biscay, FR)*. Conference in the frame of the Master courses, Ecology and Environment, University of Angers (FR).

### POPULARIZATION SCIENTIFIC PROJECTS:

- 2014**                    **Scientific tour guide** for adult groups (La Rochelle Aquarium, FR).
- 2014**                    **Activities organizer** (KIVOG events Agency, La Rochelle, FR): scientific animations (kids and adults), treasure hunting for kids, nautical rally.
- 2014**                    ***World Oceans Day*** with La Rochelle University (FR): scientific animations “*Fish and Pollution*” for Primary, Middle and High Schools.
- 2011**                    ***Vulg’ à Val*** with Valin High School (La Rochelle, FR): Research perception through conferences and scientific animations.
- 2007-2008**                    ***The discovery of marine resources on the French coasts***: acquisition of photographic data, conferences at the Aquarium of La Rochelle and scientific classes in Primary Schools (FR).
- 2007**                    **Sea School *Discovery of the marine biology*** with Montmorillon Primary School (FR): discover of rocky shores (algae, animal) in Brittany (FR), scuba- diving, identification of plankton, courses on the food web.
- 2007**                    **Sea School *Discovery of the marine environment and scuba-diving*** for young people with social difficulties. Scuba-diving club of La Rochelle University (L-PUR)/Halfway House of Orléans (FR).

## 6. PUBLICATIONS AND COMMUNICATIONS

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### PEER REVIEWED PUBLICATIONS

- (7) **Perrichon P.**, Akcha F., Le Menach K., Goubeau M., Budzinski H., Cousin X. and Bustamante P. Parental trophic exposure to three aromatic fractions of polycyclic aromatic hydrocarbons in the zebrafish: consequences for the offspring. *Science of the Total Environment* 524-525, 52-62. [IF: 4.099]
- (6) **Perrichon P.**, Le Bihanic F., Bustamante P., Le Menach K., Budzinski H., Cachot J. and Cousin X., 2014. Influence of sediment composition on PAH toxicity using zebrafish (*Danio rerio*) and Japanese medaka (*Oryzias latipes*) embryo-larval assay. *Environmental Science and Pollution Research* 21, 13703-13719. [IF: 2.757]
- (5) Le Bihanic F., **Perrichon P.**, Landi L., Clérandeau C., Le Menach K., Budzinski H., Cousin X. and Cachot J., 2014. Standardization of the MELA Medaka Embryo Larval assay with sediment exposure. *Environmental Science and Pollution Research*. 21, 13689-13702. [IF: 2.757]
- (4) Lucas J., **Perrichon P.**, Nouhaud M., Audras A., Le Menach K., Budzinski H., Leguen I. and Lefrancois C., 2014. Aerobic metabolism and cardiac activity in the descendants of zebrafish exposed to pyrolytic polycyclic aromatic hydrocarbons. *Environmental Science and Pollution Research* 21, 13888-13897. [IF: 2.757]
- (3) Larcher T., **Perrichon P.**, Vignet C., Ledevin M., Le Menach K., Lyphout L., Landi L., Clerandean C., F. Lebihanic, Ménard D., Burgeot T., Budzinski H., Akcha F., Cachot J. and Cousin X., 2014. Carcinogenic but no genotoxic effects detected following chronic trophic exposure of zebrafish to three fractions of polycyclic aromatic hydrocarbons (PAHs). *Environmental Science and Pollution Research* 21, 13833-13849. [IF: 2.757]
- (2) Vignet C., Le Menach K., Mazurais D., Lucas J., **Perrichon P.**, Le Bihanic F., Lyphout L., Frère L., Bégout M.L., Zambonino-Infante J.L., Budzinski H. and Cousin X., 2014. Chronic exposures to pyrolytic and petrogenic mixtures of PAHs through diet produce physiological disruptions in zebrafish – Part I: Survival and growth. *Environmental Science and Pollution Research* 21, 13804-13817. [IF: 2.757]
- (1) Kerambrum E., Henry F., **Perrichon P.**, Courcot L., Meziane T., Spilmont N. and Amara R., 2012. Growth and condition indices of juvenile turbot, *Scophthalmus maximus*, exposed to contaminated sediments: effects of metallic and organic compounds. *Aquatic Toxicology* 108, 130-140. [IF: 3.513]

**Perrichon P.**, Le Menach K., Akcha F., Cachot J., Budzinski H. and Bustamante P. Toxicity assessment of spilled-petroleum related compounds using zebrafish (*Danio rerio*) embryo-larval assay and multiscale approach. (Submitted).

### ORAL COMMUNICATIONS

*Principal speaker:*

**Perrichon P.**, Le Menach K., Akcha F., Cachot J., Budzinski H. and Bustamante P. Using a multimarker approach on early life stages of zebrafish (*Danio rerio*) for toxicity assessment of petroleum hydrocarbons. *Spring School: (Bio) Analytical strategies for speciation and ecotoxicity studies*, May 20-23<sup>rd</sup>, 2014, UCM Madrid, ES.

**Perrichon P.**, Budzinski H., Le Menach K., Akcha K., Bustamante P. and Cousin X. Physiological effects on zebrafish offspring following dietary parental exposure to a pyrolytic PAH mixture. *17<sup>th</sup> International Symposium on Pollution Responses in Marine Organisms PRIMO17*, May 5-8<sup>th</sup>, 2013, Faro, PT.

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**Perrichon P.** Impact of Polycyclic Aromatic Hydrocarbons (PAHs) on early life stages of zebrafish *Danio rerio*. *Seminar of Ph. D. students (3<sup>rd</sup> year)*, June 27<sup>th</sup>, 2013, LIENSs/La Rochelle University, FR (*in French*).

**Perrichon P.** Development of embryo-larval assays to assess effects of hydrophobic substances. *Seminar of Ph. D. students (2<sup>nd</sup> year)*, May, 31<sup>st</sup>, 2012, La Rochelle University, FR (*En Français*).

*Associated-author:*

Lucas J., Percelay I., Nouhaud M., Rosset L-C., **Perrichon P.** and Lefrançois C. Parental trophic exposure to polycyclic aromatic hydrocarbons: effects on metabolic and swimming performance in descendants of zebrafish (*Danio rerio*). *11<sup>th</sup> International Congress on the Biology of Fish (ICBF)*, August 3-7<sup>th</sup>, 2014, Edinburgh, SCO.

Le Bihanic F., **Perrichon P.**, Budzinski H., Le Menach K., Cousin X. and Cachot J. Comparative effects of three PAH fractions from light and heavy crude oils and from a PAH-contaminated sediment on *Oryzias latipes* Japanese medaka early life stages. *3<sup>RD</sup> Young Environmental Scientists Meeting (YES)*, February, 11-13<sup>rd</sup>, 2013, Kraków, PL.

Kerambrun E., **Perrichon P.**, Henry F., Sanchez W., Courcot L. and Amara R. Growth, condition indices and biomarker responses of juvenile turbot, *Scophthalmus maximus*, exposed to contaminated sediment. *16<sup>th</sup> International Symposium on Pollution Responses in Marine Organisms PRIMO16*, May, 15-18<sup>th</sup>, 2011, Long Beach, California, USA.

Kerambrun E., **Perrichon P.**, Henry F., Sanchez W. et Amara R.. Influence of contaminated sediment on physiological performance and biomarker responses on juvenile of turbot *Scophthalmus maximus*. *26<sup>e</sup> Forum des jeunes océanographes*, October, 1<sup>st</sup>, 2010, Wimereux, FR (*En Français*).

## **POSTERS**

*Principal author:*

**Perrichon P.**, Le Menach K., Akcha F., Cachot J., Budzinski H. and Bustamante P. Using a multimarker approach on early life stages of zebrafish (*Danio rerio*) for toxicity assessment of petroleum hydrocarbons. *Spring School: (Bio) Analytical strategies for speciation and ecotoxicity studies*, May 20-23<sup>rd</sup>, 2014, UCM Madrid, ES.

**Perrichon P.**, Budzinski H., Le Menach K., Bustamante P. and Cousin X. Comparative effects of two water-accommodated fractions from light and heavy crude oils on early life stage of zebrafish *Danio rerio*. *3<sup>RD</sup> Young Environmental Scientists Meeting (YES)*, February 11-13<sup>rd</sup>, 2013, Kraków, PL.

**Perrichon P.**, Kerambrun E., Henry F., Sanchez W. and Amara R.. Effects of contaminated sediments on physiological performance and biomarker responses in juvenile turbot *Scophthalmus maximus*. *47<sup>th</sup> Estuarine of Coastal Sciences ECSA 47*, September 14-19<sup>th</sup>, 2010, Figueira Da Foz, PT.

**Perrichon P.** Development of embryo-larval assays to assess effects of hydrophobic substances. *Seminar of Ph. D. students (2<sup>nd</sup> year)*, May, 31<sup>st</sup>, 2012, La Rochelle University, FR (*En Français*).

*Associated-author:*

Le Bihanic F., Sommard V., **Perrichon P.**, Cousin X. and Cachot J. A new reference artificial sediment for hydrophobic compound testing with the Japanese Medaka embryo-larval assay (MELA). *Fish and Frog Embryos*, October 11-12<sup>th</sup>, 2012, Aulnay-sous-Bois, FR.

Le Bihanic F., **Perrichon P.**, Cousin X. and Cachot J. The use of Japanese medaka embryo-larval assay (MELA) and reference artificial sediment for toxicity assessment of hydrophobic pollutants. *1st European Network for Alternative Testing Strategies in Ecotoxicology (EUROECOTOX)*, June 28-29<sup>th</sup>, 2012, Eawag, Dübendorf, CH.

Kerambrun E., **Perrichon P.**, Henry F. et Amara R. Influence of contaminated sediment on physiological performances of turbot juvenile, *Psetta maxima*. *Seminar of Ph. D. students IRePSE 2011*, January 18<sup>th</sup>, 2011, Villeneuve d'Ascq, FR (3<sup>ème</sup> Prix du Jury).

## 7. TRAINING/SCHOOL/WORKSHOP

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- 2014  
(July, 8-11<sup>th</sup>)      **CNRS (National Center of Scientific Research) Thematic Training:**  
*Implications of ionic transport in cellular function* (Poitiers University, FR): Use of several analytical tools (immunostaining, patch-clamp, optogenetic, FRAP, SICM, confocal and DIC imaging). *Theory and practice.*
- 2014  
(May, 20-23<sup>rd</sup>)      **Spring School of OROQUE SUDOE Project (European project Interreg IV B):** *(Bio)Analytical strategies for speciation and ecotoxicity studies* (Complutense University of Madrid, ES): Trace elements and speciation analysis; Imaging strategies for environmental studies; Toxicity of species in the environment; Bioconcentration/bioaccumulation of emergent contaminants.
- 2014  
(March, 6-7<sup>th</sup>)      **5<sup>th</sup> Oil Spill Studies Workshop of ISDAMP European Project:** *The economic aspects of pollution* (EIGSI Engineering School, La Rochelle, FR): Discussion about European projects on pollution (ISDAMP, NETMAR, ARCOPOL/POSOW); Future outlook for European cooperation in preparedness and response to pollution; Oil spill contingency plans; The use of modelling as an emergency response tool.
- 2013  
(February, 11<sup>th</sup>)      **Young Environmental Scientists (YES) Workshop** by Prof. Valery FORBES (University of Lincoln Nebraska): *The essentials of scientific networking – Be remembered for the Right reasons* (Krakow University, PL).



