



Advanced Course on

BIOMARKERS | 30th may – 3rd of June, 2016
from gene to the ecosystem

ESTM – Polytechnic Institute of Leiria

Peniche, Portugal



Qualifies for the **SETAC Europe Certification of Environmental Risk Assessors** programme

BIOMARKERS COURSE SCOPE

The fourth edition of the one-week **SETAC Summer School** will be held from the 30th May to the 3rd June 2016 at **CETEMARES building - Polytechnic Institute of Leiria**, Peniche, Portugal. The Biomarkers advanced course aims to provide knowledge on user-friendly development of biomarker tools to assess and understand the impact of stressors in the environment by establishing a link between different levels of the biological continuum. The course, worth **3 ECTS**, is composed by theoretical lectures and a strong practical (hands-on) component and is targeted to scientists, and PhD and MSc students with a background in Biology, Environmental Sciences, Chemistry, Environmental engineering or related fields, members of consulting companies, and of private and public institutions responsible for environmental management. All lectures and training sessions will be held in English.

SETAC Europe Risk Assessors Certification Programme

The Biomarkers course **QUALIFIES** for the **SETAC Europe Certification of Environmental Risk Assessors programme!**

The CRA programme is an initiative of the Society of Environmental Toxicology and Chemistry - Europe. The SETAC Europe Certification of Environmental Risk Assessors (CRA) programme is established to provide an internationally recognized standard for environmental risk assessors.



The programme offers a range of courses for students and professionals to obtain the level of education and expertise to fulfill the requirements for SETAC Europe certified Environmental risk assessor.

For more information: <http://certification.setac.eu> || CRA@setac.org

BIOMARKERS THEMATICS

This course will comprise both theoretical and hands-on practical lectures. All lectures are in English.

Thematic 1	Introduction to biomarkers
Thematic 2	Linking different levels of biological organization
Thematic 3	Traditional biochemical biomarkers in ecotoxicology
Thematic 4	Genomics/Transcriptomics biomarkers
Thematic 5	Proteomics biomarkers
Thematic 6	Giving fatty acid a biomarker profile
Thematic 7	From Biomarker to Biosensor

BIOMARKERS PROGRAMME (preliminary)

Monday, May 30th

09h00 – 09h30 – Welcome to participants
09h30 – 10h30 – Lecture: Introduction to Biomarkers
10h30 – 11h00 – Coffee Break
11h30 – 12h30 – Lecture: Linking different levels of biological organization
12h30 – 13h00 – Lecture: Course HANDS ON the subject
13h00 – 14h00 – Lunch
14h00 – 16h00 – Field Trip: Organism collection at a rocky beach
16h00 – 17h30 – Lecture: Transcriptomics biomarkers
17h30 – 19h00 – Lecture: Insights into the mechanisms of evolution from ecotoxicogenomics

Tuesday, May 31st

09h00 – 10h30 – Lecture: Traditional biochemical biomarkers in ecotoxicology
10h30 – 11h00 – Coffee Break
11h00 – 13h00 – Training session: Sample preparation of collected organisms
13h00 – 14h00 – Lunch
14h00 – 16h00 – Training session: Protein quantification
16h00 – 19h00 – Training session: Cholinesterase, Catalase and Glutathione S-transferase enzyme activities

Wednesday, June 1st

09h00 – 11h00 – Lecture: Proteomics biomarkers
11h00 – 11h30 – Coffee Break
11h30 – 13h00 – Lecture: Proteomics case study
13h00 – 14h00 – Lunch
14h00 – 19h00 – Training session: Sample preparation and protein separation by Isoelectric Focusing (IEF) (First dimension)

Thursday, June 2nd

09h00 – 11h00 – Training session: Second dimension SDS-PAGE
11h00 – 11h30 – Coffee Break
11h30 – 13h00 – Training session: Second dimension SDS-PAGE (cont.)
13h00 – 14h00 – Lunch
14h00 – 18h30 – Training session: Data treatment
18h30 – 19h00 – Training session: Gel Staining

Friday, June 3rd

09h00 – 11h00 – Lecture: Giving fatty acid a biomarker profile
11h00 – 11h30 – Coffee Break
11h30 – 13h00 – Lecture: From Biomarker to Biosensor
13h00 – 14h00 – Lunch
14h00 – 15h00 – Wrapping up the data
15h00 – 19h00 – Evaluation period for attendees pursuing diploma

BIOMARKERS COURSE FEES & REGISTRATION

Normal course fee - 600 Euros

IPLeiria, MARE, and SETAC members – 400 Euros

Student and IPLeiria alumni fee - 300 Euros

To register, fill the identification form below and send by email to Sara Novais (sara.novais@ipleiria.pt).

LIMITED TO 16 PARTICIPANTS

VENUE and TRAVELLING TO PENICHE



Biomarkers course will be held at the **CETEMARES building** - Polytechnic Institute of Leiria, Peniche – the Wave Capital - Portugal. The closest airport to Peniche is in Lisbon, about 90Km from our location. From Lisbon you can take a bus, it takes about 1h30m and stops at Peniche. From here it is a 5 minute walk to our facilities.

Driving from Lisbon – Take the A8 Highway and drive North direction Leiria/Porto. Stop at the toll to collect a ticket and pay on the next toll. Drive towards Peniche exiting via the IP6 off-ramp. This travel won't take more than 1 hour drive.

ACOMODATION

Several accommodation options are available in Peniche. A special rate for course participants is available at hotels just 15 minutes walking distance from the venue:

	Hotel Soleil (www.soleilpeniche.com)	MH Peniche (www.mh-hotels.pt)
Single room (standard)	35 EUR/day (breakfast included)	45 EUR/day (breakfast included)
Twin room (standard)	45 EUR/day (breakfast included)	55 EUR/day (breakfast included)

WANT TO START THE **SUMMER COURSE EARLIER?**



For those who want to have an early start in the social part of the course, a beginners surf lesson is planned for those arriving sooner, at Sunday the 29th of May – please ask us for details.

BIOMARKERS COURSE LECTURERS

Marco Lemos (course coordinator)

MARE – Marine and Environmental Sciences Centre, Instituto Politécnico de Leiria, Portugal

Marco Lemos holds his PhD in Biology since 2009 and is now Associate Professor at the Polytechnic Institute of Leiria. Presently he is the head of MARE – Marine and Environmental Sciences Centre, Polytechnic Institute of Leiria. He is now involved in several post-doc, PhD and MSc supervision as well as national and international collaborations in works involving the study of toxicological mechanism pathways using “omic” technologies and other biomarker tools to assess contamination in terrestrial, freshwater and marine environments, while linking levels of biological organization. He has authored over 100 communications in international conferences and several articles in international peer-reviewed journals and book chapters.



Sara Novais (course coordinator)

MARE – Marine and Environmental Sciences Centre, Instituto Politécnico de Leiria, Portugal

Sara Novais is currently a researcher and lecturer at the Polytechnic Institute of Leiria (Portugal). During her PhD at the Univ. of Aveiro, in collaboration with the Univ. of Antwerp in Belgium, she developed molecular tools for gene expression analysis in an important test species in ecotoxicology. These molecular techniques, along with other biomarker tools, have been applied to study the effects of environmental stressors at different levels of biological organization: from genes to population. This link between effects at different levels is one of her main research interests along with biomarker and mechanisms of chemical action discoveries. Since 2008, she has published 22 papers in international peer-reviewed journals and has authored over 30 communications in international conferences, including a keynote presentation given at the International Conference on Environmental OMICS in Guangzhou, China (2011).



Bart Devreese

Ghent University, Belgium

Bart Devreese is the head of the proteomics group in Ghent University, Belgium, L-Probe (Laboratory Protein Biochemistry and Biomolecular Engineering). His full career was devoted to the implementation of ESI and MALDI-TOF mass spectrometry in protein biochemistry and proteomics. The main applications of his research are the identification of bioactive compounds such as antibacterial peptides and toxins, and in the study of microbial antibiotic resistance and biofilm formation. Currently, his group focusses on signalling events in microorganisms and the role of protein secretion systems in bacterial virulence and adaptive behaviour.



Cristina Esteves

University of Aveiro, Portugal

Ana Cristina Esteves completed her PhD degree in the UA in collaboration with the Center for Neuroscience and Cell Biology, University of Coimbra in 2002 and is now an Invited Professor at the Department of Biology of Aveiro University as well as a Post-doc Researcher of CESAM-UA (Centre of Environmental and Marine Studies). AC Esteves has established national and international collaborations with scientists from UK, Belgium, Netherlands and USA. International and national collaborations have also resulted in the coordination/participation on several research projects. Her investigation is mainly centered in the unravelling the interaction of microorganisms with other organisms as well as their response to environmental changes. More specifically, she is interested in understanding the molecular pathways of the interactions between pathogens and their hosts and how these interactions are altered by the climate changes we have been assisting to.



Dick Roelofs

Vrije Universiteit, Amsterdam, The Netherlands

Dick Roelofs during his PhD studied the molecular evolutionary consequences of cytoplasmic introgression. As a Post-doc he studied the molecular mechanism of RNA interference. Subsequently, he participated in the development of new high throughput screening technologies at the US based company Promega Life Sciences. In 2002 he switched back to the academic environment as lecturer Molecular Ecology at the Vrije Universiteit (VU) Amsterdam. Currently, he is project leader of the VU Ecogenomics team participating in the Dutch Ecogenomics consortium that applies genomics tools to assess and unlock life support functions of the soil. He teaches courses in Evolutionary Genetics, Evolutionary Biology and Environmental Genomics. Recently, he co-authored the first textbook on Ecological Genomics.



Nico van Straalen

Vrije Universiteit, Amsterdam, The Netherlands

Nico M. van Straalen is Professor of Animal Ecology at the Department of Ecological Science, Vrije Universiteit, Amsterdam. His current interests are in the application of molecular insights to problems of ecology and evolution. How does natural selection act upon genetic variation to cause adaptive change in populations? What is the relative importance of transcriptional regulation in evolutionary processes, as opposed to variation in the coding regions of genes? These questions require in-depth studies at the level of genome structure and function, combined with physiology and population ecology. Stress due to environmental pollution is eminently suitable to investigate evolutionary processes because pollution is often a strong selection pressure that can be quantified and experimentally manipulated.



Roberto Carlos Marçal Gamboa

MARE – Marine and Environmental Sciences Centre, Instituto Politécnico de Leiria, Portugal

Roberto Gamboa holds his PhD in Physics since 2001 from Lisbon University, has a Post-Graduation in “Dirección Estratégica de Universidades” from the UNESCO Cátedra de Direcció Universitària, Universitat Politècnica de Catalunya, Barcelona 2008, and benefited from a Nanotechnology Summer School from Oxford University in 2009. He is now Professor Coordinador at the Polytechnic Institute of Leiria and a researcher at MARE-IPLeiria. He is co-author of an international patent WO2005/100644/US2007/0241481, presented over 30 international seminars and communications in international conferences and co-authored several articles published in international peer-reviewed journals.



Tiago Simões

MARE – Marine and Environmental Sciences Centre, Instituto Politécnico de Leiria, Portugal & Vrije Universiteit, Amsterdam, The Netherlands

Tiago Simões is a PhD student at the Polytechnic Institute of Leiria (Portugal), University of Coimbra (Portugal) and Vrije Universiteit (Amsterdam). Since his degree in marine biology and biotechnology in 2009 he started working with fatty acid profiling and lipase based systems. Currently, his PhD is focused in finding ecologically relevant effects of pesticides in invertebrates at lower levels of biological organization, namely using transcriptomics and proteomics techniques, as well as unraveling these pesticides' modes of action. He is also trying to apply fatty acid profiling as potential biomarkers to be used in environmental risk assessment, as fatty acids are highly conservative through trophic chains and important within the organism's biological mechanisms of homeostasis.



What past participants have to say...



“The Advanced Course on BIOMARKERS: From gene to the ecosystem, held in beautiful Peniche, was very insightful. Having had previous experience in the field of biomarkers, I learned a lot about new techniques and gained further understanding of established concepts. The course was great with knowledgeable speakers and valuable hands-on practice.”

Moritz Volland – PhD student at the Institute for Marine Science of Andalusia (CSIC, Cadiz, Spain)



“It was a truly enriching experience, which resulted in an effective improvement of my scientific capacity in the area of toxicity. In addition to the excellent presentations and laboratory sessions, I would point out the leisure time as unique and precious, both for networking and cultural enrichment.”

Francisco Avelelas – Researcher at Smallmatek - Small Materials and Technologies, Lda (Portugal)

“During very interesting and lively lectures, held by prestigious experts, I gained in depth insights into the theory behind multiple methodologies to assess stress conditions in marine organisms from gene to whole organism level. Furthermore, the comprehensive program of the Advanced Biomarkers Course at IPL included many practical sessions, ranging from collecting samples in the field to a variety of lab assays, with outstanding guidance. Plus, enjoying the atmosphere of a campus facing directly the open Atlantic Ocean is worth a trip on its own. By the way, Peniche is surrounded by various outstanding surf spots, so don't forget your surfboard ;-)”

Holger Kühnhold – PhD student at Leibniz Center for Tropical Marine Ecology (ZMT, Bremen, Germany)



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**FROM THE SEA TO SOCIETY
DO MAR PARA A SOCIEDADE**

Updated version of course flyer always on: www.mare.ipleiria.pt

For any information and details concerning registration, accommodation, and payment, please contact sara.novais@ipleiria.pt.



www.facebook.com/events/503006969878967/

IDENTIFICATION FORM

Advanced Course on Biomarkers

ID card number/Passaport: _____ Date of birth: ____/____/____

VAT number: _____

Institution: _____

Address: _____

Postal Code: _____ - _____

Country: _____

Phone number: _____ Cell Phone: _____

E-mail: _____

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Signature

Documents to be provided:

- Identification Form filled and signed
- Copy of the Identification document
- Confirmation of eligibility for discount fees

NOTE: Registration will only be considered final after payment is received – details for payment will be sent after this form is returned to sara.novais@ipleiria.pt.