



Advanced Course on

BIOMARKERS | 1 - 5 of June, 2015
from gene to the ecosystem

ESTM – Polytechnic Institute of Leiria

Peniche, Portugal



NOW qualifies for the **SETAC Europe Certification of Environmental Risk Assessors** programme

BIOMARKERS COURSE SCOPE

The third edition of the one-week **SETAC Summer School** will be held from the 1st to the 5th June 2015 at **ESTM - Polytechnic Institute of Leiria**, Peniche, Portugal, under the framework of the **Campus do Mar – International Campus of Excellence**. The Biomarkers advanced course aims to provide knowledge on the 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 **NOW** 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 biomarkers
Thematic 5	Proteomics biomarkers
Thematic 6	Giving fatty acid a biomarker profile
Thematic 7	From Biomarker to Biosensor

BIOMARKERS PROGRAMME

Monday, June 1st

9h30 – Welcome to participants
10h00 – 11h00 – Lecture: Introduction to Biomarkers
11h00 – 11h30 – 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 – 19h00 – Training session: Sample preparation of collected organisms

Tuesday, June 2nd

9h00 – 11h00 – Lecture: Traditional biochemical biomarkers in ecotoxicology
11h00 – 11h30 – Coffee Break
11h30 – 13h00 – Lecture: Transcriptomics biomarkers
13h00 – 14h00 – Lunch
14h00 – 16h00 – Training session: Protein quantification
16h00 – 19h00 – Training session: Cholinesterase and Glutathione S-transferase enzyme activity

Wednesday, June 3rd

9h00 – 11h00 – Lecture: Proteomics biomarkers
11h00 – 11h30 – Coffee Break
11h30 – 13h00 – Lecture: Comparative genomics
13h00 – 14h00 – Lunch
14h00 – 19h00 – Training session: Sample preparation and protein separation by Isoelectric Focusing (IEF) (First dimension)

Thursday, June 4th

9h00 – 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 5th

9h00 – 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

MARE, Campus do Mar and SETAC members – 400 Euros

Student fee - 300 Euros

To register, fill the identification form below and send by email to Sara Novais (sara.novais@ipleiria.pt) till the 15th May.

LIMITED TO 16 PARTICIPANTS

VENUE and TRAVELLING TO PENICHE

Biomarkers course will be held at the ESTM - 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 in Peniche. From here you can either take bus to our facilities or take a 5 minute distance taxi drive.

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. Upon request we can easily provide with different options and pre-book a number of rooms close from the venue with a convenient price.

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

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 31st of May – please ask us for details.

BIOMARKERS COURSE LECTURERS

Marco Filipe Loureiro 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. He has authored over 90 communications in international conferences and several articles in international peer-reviewed journals and book chapters – including the review “Proteins in ecotoxicology - How, why and why not?” in the renowned journal *Proteomics*. He is the PI of FCT project EnvironOme – Integrating Omics in ecotoxicology: tools for environmental risk assessment (PTDC/AGR-PRO/3496/2012).

Sara Calçada 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). Since her biology degree in 2007, she has been specializing in the fields of ecotoxicology, genomics and environmental biology. 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 linkage 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 micro-organisms and the role of protein secretion systems in bacterial virulence and adaptive behaviour.

Dick Roelofs

Vrije Universiteit, Amsterdam, The Netherlands

Dick Roelofs holds an MSc degree in Agricultural Sciences, with specialisation in plant molecular genetics. During his PhD thesis he studied the molecular evolutionary consequences of cytoplasmatic 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.

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 of Direcció Universitària, Universitat Politècnica de Catalunya, Barcelona 2008, and benefited from a Nanotechnology Summer School from Oxford University in 2009. He is now Professor Coordenador at the Polytechnic Institute of Leiria and a researcher at SESUL (Sustainable Energy Systems University of Lisbon) and at GIRM-IPL (Marine Resources Research Group). 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.

Tjalf de Boer

Vrije Universiteit, Amsterdam, The Netherlands

Tjalf de Boer studied chemistry at the University of Amsterdam where he obtained a Masters degree in Biomolecular Sciences in 2005 with a main research topic in epigenetics where he studied target genes of polycomb proteins in relation to Hox gene mediated development. In 2006 he started a PhD at the department of Ecological Sciences at the VU where he worked within the Ecogenomics consortium. His main research topic was about the transcriptional response of the springtail *Folsomia candida* when exposed to a variety of natural, clean soils in order to establish a base line transcriptional response to be able to distinguish gene expression patterns caused by pollutants from those caused by natural processes. Tjalf obtained his PhD in 2010 and has been a postdoc at both Ecological Sciences as well as the Amsterdam Climate Change Institute since 2011. Now his main interest is in bioinformatics where he develops tools that use gene expression in multiple organisms to assess environmental risks of products and processes within green chemistry.

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. During his degree in Biosciences he became interested in ecotoxicology, mainly in the molecular mechanisms involved in the organisms' responses to environmental stressors. Currently, his PhD is focused on 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 (Aveiro, 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)

Within the framework of:



Integrating Omics in ecotoxicology: tools for environmental risk assessment
PTDC/AGR-PRO/3496/2012

With the support from:



FCT Fundação para a Ciência e a Tecnologia
MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR



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

IDENTIFICATION FORM

Advanced Course on Biomarkers

Name: _____

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

VAT number: _____

Institution: _____

Address: _____

Postal Code: _____ - _____

Country: _____

Phone number: _____ Cell Phone: _____

E-mail: _____

Course Fee

Normal Fee: 600€ ☐ MARE, Campus do Mar and SETAC members Fee: 400€ ☐ Student Fee: 300€ ☐

(Please provide confirmation of eligibility for the discount fees)

, ____ of _____ of 2015

Signature

Documents to be provided:

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