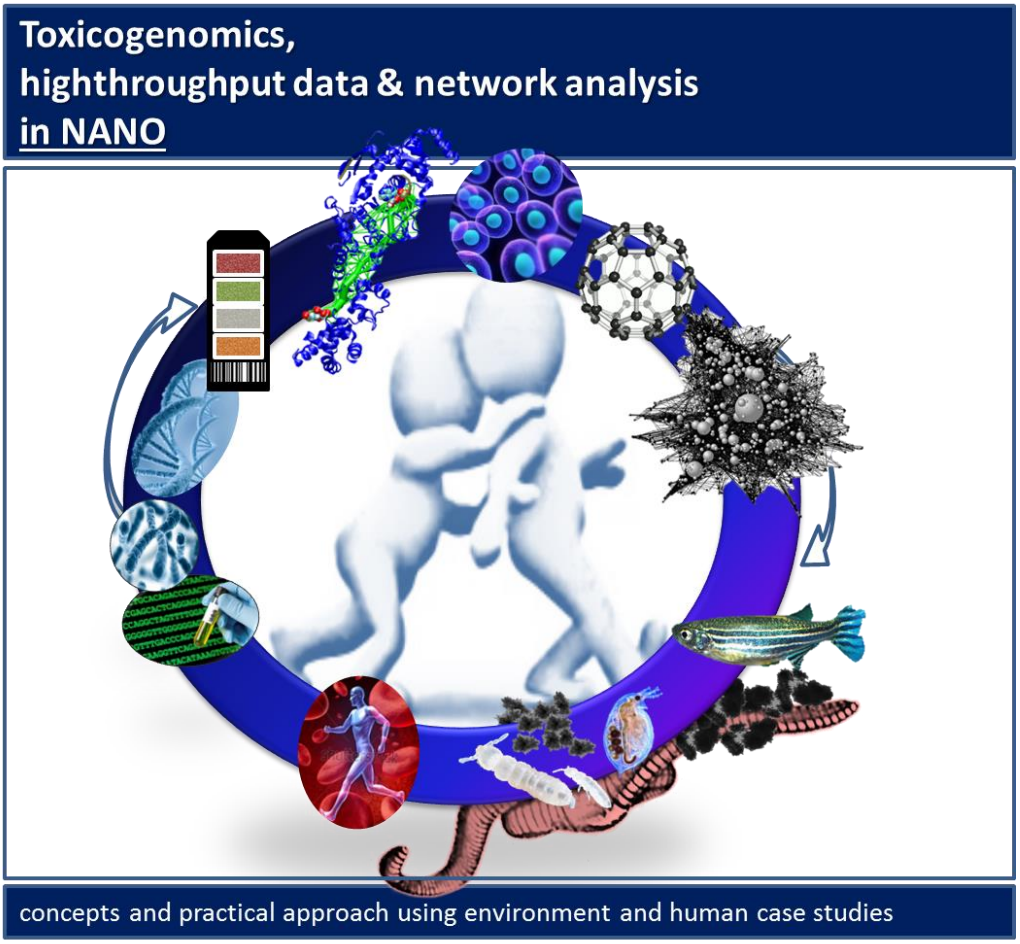
Toxicogenomics, high-throughput data & network analysis in NANO

1-5 September 2014

SETAC Summer School Course
Advanced Workshop Studies in Biology and Applied Biosciences, Debio & CESAM



This one-week post-graduate course, 8th year, to be held from 1-5 September 2014 aims to show how molecular biology techniques can provide in depth knowledge on the mode of action and related stress following chemicals exposure, with particular focus on advantages in relation to screening nanomaterials. The course includes a combination of lectures and practical hands-on work, including e.g. RNA extraction, cDNA synthesis, real time PCR, microarrays differential gene expression and data analysis. Since such high-throughput techniques may provide large quantity of data, data analysis is a major topic which in this course will be addressed via various tools e.g. network analysis. To provide a line in the course, case studies will be included covering both environmental and human-tox. The course is addressed to scientists and PhD and M.Sc. students with a background in Biology, Natural and Environmental Sciences, Chemistry, Environmental engineering or related fields, members of consulting companies and of private and public institutions responsible for environmental management. A maximum of 25 students will be admitted. The students are encouraged to bring their own data to explore analysis.

This course is part of the training & dissemination activities of the EU project SUN: Sustainable Nanotechnologies (FP7-NMP-2013-LARGE-7, No. 604305), FCT bio-CHIP (EXPL/AAG-MAA/0180/2013) and MODERN (FP7-NMP-2012-SMALL-6, No. 309314-2).

Sustainable Nanotechnologies Project

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Thematics	
Thematic 1	Basics of ecotoxicogenomics: strategies and designs;
Thematic 2	RNA extraction, cDNA synthesis; Real time PCR;
Thematic 3	Development of microarrays: spotting, hybridization techniques;
Thematic 4	High-throughput data analysis; Network analysis;
Thematic 5	Environment and human tox case studies
Thematic 6	Advantages of using high-throughput tools for nanotoxicology
Thematic 7	Integration of omics in risk assessment
Thematic 8	Web tools

Course Coordinators: ***Mónica Amorim***

Lecturers	
Lecturer 1	**Dr. Mónica Amorim** has been dedicated to ecotoxicology, mostly terrestrial, and trying to understanding the underlying mechanisms of response for many chemicals, including nanomaterials. She has been involved in the standardisation of guidelines (OECD/ISO), covering aspects from kinetics studies (e.g., ROS enzymes, gene expression) over population (survival, reproduction) to multispecies mesocosms. She has optimised the use of genomic tools, e.g. the transcriptome microarray for *Enchytraeus crypticus* (Oligchaete), a high-throughput gene library. She is full time researcher, was chair of SETAC Soil Advisory Group and will be SETAC Europe President 2014. University of Aveiro, Department of Biology & CESAM- Centre for Environmental and Marine Studies, Portugal.
Lecturer 2	**Dr. Carlos P. Roca** is a Senior Researcher of the University Rovira i Virgili, in Tarragona, Spain. He has a PhD in applied mathematics and has worked extensively in computational science, with an emphasis on the application of complex networks theory. His current research interests are biostatistics and systems biology. He is now developing tools for the analysis of pathways in data from high-throughput -omics platforms. University Rovira i Virgili, Department of Chemical Engineering, BioCenit Research Lab. Tarragona, Catalonia, Spain.
Lecturer 3	**Dr. Bengt Fadeel** is a Professor of Medical Inflammation Research at the Institute of Environmental Medicine, Karolinska Institutet, and Head of the Division of Molecular Toxicology. He is actively engaged in several EU projects on nanosafety and Chair of the Working Group on Systems Biology in the EU NanoSafety Cluster. Division of Molecular Toxicology, Institute of Environmental Medicine, Karolinska Institutet, Stockholm, Sweden.
Lecturer 4	**Dr. Janeck Scott-Fordsmand** is a Senior Scientist at Bioscience, University of Aarhus, Denmark. He is now investigating how to use molecular effects in risk assessment for nanomaterials. He is actively involved in various National and International nanoecotoxicity projects. Department of Bioscience, Aarhus University, Denmark.

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Lecturer 5	**Dr. Susana Gomes** is a Post-Doc fellow at the University of Aveiro, Portugal. During her studies she has been developing research in ecotoxicogenomics. She has been using molecular tools such as microarrays, qPCR or sub-cellular oxidative stress biomarkers to assess the effects of stressors, e.g. nanomaterials, using *Enchytraeus albidus/crypticus* (Oligochaeta) microarray. University of Aveiro, Department of Biology & CESAM- Centre for Environmental and Marine Studies, Portugal.
Lecturer 6	**Dr. Joel Arrais,** is an Assistant Professor at the University of Coimbra. His recent research interests include microarray data standards and analysis, information retrieval and computational methods for gene-disease association. He has been involved in the development of several bioinformatics tools such as Mind, Quext, Gens and most recently, GeneBrowser that aims to be an all-in-one web application for functional analysis of microarray studies. CISUC (Centre for Informatics and Systems of the University of Coimbra), University of Coimbra, Portugal.

Practical issues	
Registration fee – full	600 Euros
Registration fee – discount	500 Euros (members of SUN Consortium, SETAC, Ordem dos Biólogos)
Venue / Accommodation	University of Aveiro, Department of Biology & CESAM, Aveiro, Portugal. Several accommodation options are available in the city of Aveiro, from a youth hostel, pensions and hotels. As soon as we have more information on the prices and availability of rooms we will inform you. We can easily pre-book a number of rooms, in a hotel within walking distance from the University with a convenient price.
Travel details	**Travel to Aveiro** **For those arriving at Porto Airport**: Aveiro has an excellent railway service to Porto, situated 60 km North of Aveiro. Porto airport is directly connected to the major European and some North and South American cities. Travel by underground between Porto airport and railway station of Porto-Campanhã is 40 minutes. Depending on the type of train service used, travel between Porto-Campanhã and Aveiro railway takes 30 to 50 minutes and costs between €2 and €13. On average, there are trains every 25 minutes between Porto and Aveiro. Aveiro University is 5 minutes taxi distance from the railway station, and the taxi fare is around €5 to €7. **For those arriving at Lisbon airport:** Aveiro is also connected by train to Lisbon, situated 250 km South of Aveiro. From Lisbon airport you should go to Oriente railway station, by taxi (fare between €10 to €15). On average, there are trains from Lisbon-Oriente to Aveiro every 90 minutes. Train will cost between €15 to €30, and the journey between Lisbon-Oriente and Aveiro railway station will be around 2,5 hours.

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REGISTRATION FORM

(send by fax (+351 234 372587) or e-mail (mjamorim@ua.pt) to **Mónica Amorim** till the 7th July)

Name:_____
Institution:_____
Address:_____
Country:_____
Invoice to:_____

Course Fee:

Normal Fee: 600 € ☐ Discount Fee: 500 € ☐
(please provide confirmation of eligibility for the discount fee)

Accommodation:

Yes, I am interested in booking a room ☐

Arrival date: ___/08/2014 Departure date: ___/09/2014

No, I will book my own room ☐

Paying by bank transfer is preferable, in advance to the course using the following details:

Bank transfer data:
NIB (Número de Identificação Bancária): 0035 0836 00002162 030 11
IBAN (International Bank Account Number): PT50 0035 0836 00002162 030 11
BIC (Bank Identification Code): CGDIPTPL

Please add the course name in the information field and send the confirmation of bank transfer to mjamorim@ua.pt