



# 2<sup>nd</sup> SCIENTIFIC COURSE

## “Immunity of earth invertebrates”

December 11<sup>th</sup>, 12<sup>th</sup> and 15<sup>th</sup> 2017 - University of Cardiff, United Kingdom

### AGENDA

#### 11<sup>th</sup> December 2017

##### Arrivals

14.00-17.00 Laboratory-based course: “Assessing the impact of NPs on invertebrate immune cells”  
*See synopsis.*

#### 12<sup>th</sup> December 2017

09.00-12.30 Laboratory-based course: “Assessing the impact of NPs on invertebrate immune cells”  
*See synopsis.*

12.30-14.00 Lunch + seminar  
*During lunch time, a seminar with an external speaker will be organised to present specialist approaches that may provide additional insights.*

14.00-17.00 Laboratory-based course: “Assessing the impact of NPs on invertebrate immune cells”  
*See synopsis.*

#### 15<sup>th</sup> December 2017

09.00-12.30 Hands-on informatics course: “Mining ‘omics to support NP adverse outcome pathways”  
*See synopsis.*

12.30-14.00 Lunch + seminar  
*During lunch time, a seminar with an external speaker will be organised to present specialist approaches that may provide additional insights.*

##### Departures

### Brief synopsis of the Scientific Course

- **Assessing the impact of NPs on invertebrate immune cells**

This will be a laboratory-based course providing the Fellows with a ‘hands-on’ opportunity to perform a suite of analytical methods used to analyse the impact of NPs on invertebrate immune cells. Procedures will employ coelomocytes generated from *Eisenia fetida*, which contain three major cell populations: eleocytes, amoebocytes and granulocytes. After orientating the Fellows as to the gross anatomy and cell biology of the earthworm, they will be evaluating NP effects on an *in vitro* culture of coelomic cells using a battery of cellular approaches, including:

1. quantifying immune cell numbers and composition using classical histochemistry;
2. assessing cellular integrity as determined by lysosomal membrane stability using neural red retention;
3. eleocyte activity using confocal microscopy to analyse the intensity and spectra characteristics of their FMN based autofluorescence analysis.



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On both days external speakers will be invited to deliver lunchtime seminars aimed to present specialist approaches that may provide additional insight into the impacts of NPs. Provisionally, these sessions will include:

- Prof. Paulo Borri: “Coherent Anti-Stokes Raman Scattering (CARS) for label-free studies on living cells”;
- Prof. Fred Mosselmans: “Use of synchrotron derived X-ray Absorption Spectroscopy to explore the *in situ* metal speciation in biological systems”.

- **Mining ‘omics to support NP adverse outcome pathways**

Technological advances allow us to measure every component bio-molecule, transcript, protein or metabolites, within a biological system. This ‘global’ or ‘omics level information delivers an extraordinary quantity of data providing the challenge of biological interpretation of these complex data sets. Increasingly, NP-associated ‘omics data is being deposited into international data repositories. Mining these data for information that may assist or support key research hypotheses is a key skill that all Fellows require.

This short hands-on informatics course will show Fellows how to mine ‘omics data from GEO and perform data reduction and biological interpretation of the data.

### MEETING VENUE

University of Cardiff - School of Biosciences  
The Sir Martin Evans Building - Museum Ave - Cardiff, CF10 3AX, United Kingdom