

O6

**Branco, Diana**<sup>1</sup>; Lima, Ana<sup>1</sup>; Guasch, Helena<sup>2</sup>; Santos, José<sup>1</sup>; Almeida, Salomé<sup>3</sup>; Figueira, Etelvina<sup>1</sup>

<sup>1</sup>University Of Aveiro. Biology Department, University Of Aveiro, AVEIRO. 3810-193 - PORTUGAL, salmeida@ua.pt

<sup>2</sup>Institute of Aquatic Ecology - Campus de Montilivi 17071, University of Girona

<sup>3</sup>GeoBioSciences GeoTechnologies and GeoEngineering (GeoBioTec) Research Unit and Department of Biology, University of Aveiro, 3810-193, Aveiro, Portugal

#### EFFICIENCY OF THE PHYTOCHELATIN METAL COMPLEXATION IN NITZSCHIA PALEA (KÜTZING) W. SMITH TOLERANCE TO CADMIUM

The focus of this study was to evaluate the effective role of phytochelatin cadmium complexation in the freshwater diatom *Nitzschia palea*. Diatom cultures were exposed under laboratory conditions, to three different Cd concentrations (0, 0.1, 0.2, and 0.3 mg Cd.l<sup>-1</sup>). PC-Cd complexes were isolated from four sequential buffer extractions through size exclusion chromatography. Cadmium and sulphide were quantified and thiol composition was determined by HPLC analysis. The majority of Cd was complexed with peptides, in 0.1 mg Cd.l<sup>-1</sup> treatment only 49% of intracellular Cd was bound to PC molecules, while in 0.2 mg Cd.l<sup>-1</sup> almost all Cd was complexed to PCs, and at the highest Cd concentration (0.3 mg Cd.l<sup>-1</sup>) the efficiency of phytochelatin started to decline, being 79% of the Cd complexed. The highest toxicity levels induced a decrease in total PCn amount, but the cadmium per SH group showed to be more efficient in this treatment. Contrarily to plant and yeast reports, sulphide ions are not included in PC complexes. The PC-Cd complexation seems to be essential for *N. palea* tolerance. As soon as this mechanism starts to decrease its efficiency and free Cd ions accumulate in the cytosol, toxicity symptoms worsen Cd toxicity, survival is seriously compromised.

O1

**Sanchez, Marta I**<sup>1</sup>; Georgiev, B.<sup>2</sup>; Nikolov, P.<sup>2</sup>; Vasileva, G.<sup>2</sup>; Lenormand, T.<sup>3</sup>; Rode, N.O.<sup>3</sup>; Flaven, E.<sup>3</sup>; Varo, N.<sup>1</sup>; Amat, J.A.<sup>1</sup>; Matesanz, C.<sup>1</sup>; Díaz-Real, J.<sup>1</sup>; Green, A.J.<sup>1</sup>

<sup>1</sup>Estacion Biologica De Doñana (CSIC). Estacion Biologica De Donana, C/ Americo Vespucio S/n, SEVILLE. 41092 - SPAIN, marta.sanchez@ebd.csic.es

<sup>2</sup>Institute of Biodiversity and Ecosystem Research (BAS)

<sup>3</sup>Centre D'Ecologie Fonctionnel Et Évolutive (CNRS)

#### THE ROLE OF PARASITES IN THE INVASION SUCCESS OF THE EXOTIC BRINE SHRIMP ARTEMIA FRANCISCANA IN THE MEDITERRANEAN REGION

Biological invasions are main threats to biodiversity at global scale and increasing numbers of studies suggest that parasites may have a role. However, the mechanism through which parasites may influence the outcome of the invasion is poorly understood. Here we provide evidence supporting the role of parasites as potential agents mediating the competitive exclusion of Mediterranean brine shrimps *Artemia* (*A. parthenogenetica* and *A. salina*) by the exotic American *A. franciscana*, using different native and invasive populations from South Spain and South France. Our results revealed high rates of infection by cestodes in native brine shrimps, sometimes with extreme prevalences of up to 100%. In contrast, *A. franciscana* populations showed very low diversity, prevalence and burden of cestodes. The effect of parasites in native populations was multiple, ranging from reproduction and survival, to life history traits, microhabitat selection and diet. Infection strongly reduced host fitness by both, reducing fecundity (parasite castration) and indirectly increasing predation by birds final hosts as revealed by prey choice experiments. We found evidence that high rate of parasitism (particularly the castrating parasite *Flamingolepis liguloides*, the most prevalent cestode in natives but nearly absent in the exotic *Artemia*), indirectly affected the life-history strategy of non infected individuals, inducing for example earlier maturation. Moreover cestodes influenced spatial (vertical and horizontal) distribution of the host, altering the diet as revealed by isotopic analysis. Contrasting with the strong impact of parasites in native populations, we have never observed any pathology (castration, behavioural alteration, etc) associated with infection in the exotic species. Overall, the results of this study suggest that the large impact of cestode on the native, but not the invading species, is likely to confer a decisive competitive advantage to the invader, contributing to explain the demographic success of *A. franciscana* in the Mediterranean region.