

## ***Posidonia oceanica* molecular adaptation to the light environment**

Procaccini Gabriele\*, Dattolo Emanuela, Lauritano Chiara, Ruocco Miriam, Marín-Guirao Lazaro

Stazione Zoologica Anton Dohrn, Napoli, Italy

\* [gpro@szn.it](mailto:gpro@szn.it)

Seagrass meadows are among the most productive ecosystems, with *Posidonia oceanica* being the most important species along the Mediterranean coastline. This species forms extensive mono-specific meadows that are extremely sensitive to medium-high levels of disturbance and are being threatened by fast environmental changes caused by global warming and increasing human activities. The impact can either reflect in higher turbidity along the water column and in increased UV radiation, making the light availability one of the most important factors affecting *P. oceanica* distribution. Plants developed mechanisms of adaptations at multiple levels to track and cope with fluctuations and changes in the light environment. At molecular level, the modulation of gene expression in response to environmental changes allows plants to optimize the utilization of light energy for growth and to prevent damages due to its excess. To detect the relevant molecular adaptation strategies evolved by *P. oceanica* and to assess the plasticity showed in the acclimation under different light regimes, we are employing studies both in natural and controlled conditions. Here, we describe the differences in photo acclimation of plants living along the bathymetric cline observed in field and in a common garden experiment in mesocosms, after the exposition to contrasting light regimes. Using a transcriptional approach (both RT-qPCR and RNA-seq) coupled with a physiological one, we are also testing potential divergences existing among populations and individuals related to light sensitivity. These data should supply new insights for the management of seagrasses ecosystems, for the development of most successful transplantation strategies and ultimately for conservation of biodiversity of these precious ecosystems.