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BOOK OF ABSTRACTS

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STRESS GRANULES IN ASCIDIANS: AN OVERVIEW

Anthropic pressure is causing changes, sometimes irreversible, to ecosystems. A clear example of damage to ecosystems relate to human activities is pollution, especially by metals which accumulate in coastal waters and sediments. Metals, in turn, can induce oxidative stress on aquatic invertebrates leading to the weakening of their defenses, including immune responses.
Stress granules (SGs) are stalled translational initiation complexes preserving mRNAs for anti-stress proteins and so regulating stress responses. This is possible thanks to the presence of mRNA-binding proteins such as TIA-1 related nucleolysin (TIAR), considered an important core component of SGs. They disassemble in the presence of an acute stress so to unlock the translation of mRNAs into anti-stress proteins.
Until now, very few works have been devoted to study SGs in invertebrates, especially in marine species.
By using TIAR as SG marker we explored the possible roles of these foci in the solitary ascidian *Ciona robusta* and in the colonial ascidian *Botryllus schlosseri*, both collected in the Lagoon of Venice.
We started with an evaluation of their involvement in the responses to oxidative stress induced by metals, such as Cu, Zn, Fe and Cd, the impact of which on marine ecosystems is well documented. We carried out gene expression studies by qRT-PCR and in-situ hybridisation. To validate the hypothesis of SG posttranscriptional control, we used specific anti-TIAR antibody in immunocytochemistry and immunohistochemistry and visualized their subcellular localization in immunocytes through transmission electron microscopy. In addition, the importance of SGs in the regulation of stress responses during embryonic development was investigated in *C. robusta*, using a construct for reporter gene (LacZ) expression, containing the promoter region for TIAR.
B. schlosseri, due to its peculiar capability to reproduce sexually and asexually, was chosen to investigate the SG role during non-embryonic development, with microinjection experiments of the anti-TIAR antibody. The latter experiments suggest that SGs are involved not only in the control of stress, for example the one related to the high extent of efferocytosis occurring during the weekly generation change, but also in modulating the cell proliferation required for the full development of new adult individuals.