Primeira Sessão: Ecologia e Fisiologia – Pôsteres

Towards an evolutionary physiology in Southwestern Atlantic corals: a phylogenetic comparative approach

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Corals (Anthozoa, Scleractinia) are sensitive organisms to a series of environmental alterations. Increases in water temperature cantrigger changes in molecular stability and chemical reactions, ultimately affecting the organismal physiology. Under normal conditions, reactive oxygen species (ROS) are used as signaling molecules to stimulate cell proliferation and renewal, as well as the defense system of organisms, but can cause deleterious effects to the body, when in large amounts, by oxidizing stable molecules such as lipids in cell membranes. According to the 'Oxidative theory of coral bleaching', bleaching is characterized as a coral immune defense resulting from oxidative stress for those shallow-water species that establish photosymbiosis with dinoflagellates. As a protective mechanism against further oxidative damage, coral expels the source of ROS production - the algae symbiont. This results in the loss of the main source responsible for ATP production, impairing the maintenance of physiological functions such as growth (i.e. calcification). This project aims to characterize and comparatively evaluate physiological and biochemical biomarkers in several species of stony corals with and without photosymbiosis, from different environments on the Brazilian coast (from intertidal to deep water). It will be possible to verify the effects of gains and losses of symbiosis on the evolution of energy and oxidative metabolism, as well as on the physiology of calcification. Our hypotheses are three-fold: (i) corals without photosymbiosis have lower levels of oxidative stress; (ii) corals with photosymbiosis have greater energy availability and enzyme activity as pacemakers of calcification; (iii) non-significant phylogenetic structure of metabolic physiology and calcification. The effect of the vertical gradient on energy availability, oxidative stress and growth, using symbiosis and phylogeny as covariates, will indicate the potential for tolerance or susceptibility to environmental disturbances.

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