

L'Animation Scientifique



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Oxidative balance and physiological stress in penguins: Reproductive effort costs, parasites and phenology

The identification of the proximate causes in life histories of animal species as well as their variations and how traits are associated with stress response is a key topic in the current ecology and evolutionary biology (Costantini, 2008). Life-history is founded on the "Principle of Allocation", in which an increase of energy allocated to one function reverts decreasing the energy invested in another function (Stearns, 1992). Biological processes need energy and aerobic species use oxygen to release energy efficiently, but how to balance the need of energy with the potential by-product toxicity has been lately studied for evolutionary ecologists and is commonly known as oxidative stress. The previous is then defined as the negative effects on homeostasis when the normal redox signalling processes of the cell are altered (Jones, 2006). Moreover, when different energy demands converge, a displacement from homeostasis might occur (Moberg, 2000) resulting in stress which triggers a variety of physiological responses on glucocorticosteroids, oxidative stress or leukocyte profiles among other responses. Therefore, my talk will focus on three experiments performed in Antarctica and the Argentinian Patagonia carried on Pygoscelid and Magellanic penguins, respectively, to understand how reproduction costs, parasites and differences throughout the breeding cycle periods alter the oxidative but also the immunological balance of this long-lived seabird.

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