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SÉMINAIRE

Immune function and the island syndrome

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Life on isolated oceanic islands often means life in the absence of (or at least with fewer) top predators and large herbivores. Such a change in prey-predator and plant-herbivore interactions likely translates into slackened natural selection on the animals and plants that are normally being eaten. One consequence is high population densities on islands. Another is that over evolutionary time island organisms lose their defenses against predation and herbivory. The extent to which similar dynamics underlie changes in host defenses against parasites (i.e., immune function) is less clear. The host-parasite interaction can be seen as ecologically analogous to prey-predator and plant-herbivore interactions, and some instances of island animals being hard hit by infectious diseases have been described. If the selective pressures imposed by parasites are reduced on islands compared to on continents and if immune defenses incur costs, then the immune system architecture is expected to differ between animal hosts on living on islands and continents. In my presentation, I will explore this hypothesis by reviewing current literature and examining the breadth and consistency of results. If the hypothesis is well supported, then changes in the immune system might be appropriately recognized as a physiological aspect of the island syndrome. I will end by introducing plans for a new direction in this line of research: an examination of immunological and physiological changes associated with the reverse island syndrome. Under this scenario, low or fluctuating population densities on islands, for example due to severe environmental variation, appears to lead to a reverse set of life history changes in island animals. To date, however, little is known about the interaction between parasites and hosts defenses in this system.