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The evolutionary consequences of cellular mistakes

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Errors in basic cellular processes are ubiquitous, with famously high rates of errors during DNA replication and translation. Although such errors generate the genotypic and phenotypic variation that drives evolution, it is clear that very high rates of error are deleterious. Hence, a large body of work has analysed molecular and evolutionary mechanisms to minimize such mistakes and/or their effects. However, fundamental gaps remain. For instance, while the evolutionary impacts of altering mutation rate are well-studied, the evolution and impacts of the mutation spectrum (the frequency of different types of mutations) is poorly understood. Similarly, while mistranslation of specific proteins can be beneficial under particular stresses, the evolutionary effects of global mistranslation as well as the underlying mechanisms are not well-studied. In my talk, I will describe our work to address these problems using bacteria. I will introduce new models describing the mechanisms underlying evolutionary effects of global mistranslation; and the evolution and impacts of mutation biases

Hôte : Carla Bautista Rodríguez