CBGP
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ECOLOGICAL AND EVOLUTIONARY FACTORS DRIVE THE SPECIALIZATION OF TWO MICROSPORIDIAN PARASITES OF NATIVE AND INVASIVE *ARTEMIA*

par
Eva Lievens
Thèse CEFE, Montpellier

Both ecological and evolutionary factors may shape parasite specialization. Here, we studied the horizontally transmitted microsporidians *Anostracospora rigaudi* and *Enterocytospora artemiae* in their brine shrimp hosts, *Artemia franciscana* and *Artemia parthenogenetica*, in the salterns of Aigues-Mortes, France. In the field, both parasites infect both hosts, with prevalences ranging up to 90% or more in all host parasite combinations.

First, we studied the disease dynamics of the two microsporidians. Statistical models revealed that *A. rigaudi* is strongly seasonal, a pattern driven by the seasonality of *A. parthenogenetica*, which acts as a reservoir host. Despite this evidence of specialization, *A. rigaudi* is equally infective to both *Artemia* species when tested experimentally. In contrast, *E. artemiae* occurs throughout the year and is more infective to, and more prevalent in *A. franciscana*.

Second, we used an experimental evolution approach to study the evolution of this specialization, and its underlying trade-offs. Our results suggest that infectivity in the two hosts is linked by a weak trade-off, allowing evolution towards generalism. However, this is counteracted by a strong trade-off in spore production across hosts, which dominates the final pattern of specialization. Together, these results indicate that *A. rigaudi*, which usually infects *Artemia* populations containing both hosts, has become as generalist as possible given the underlying trade-offs specifically, it is generally infective – while *E. artemiae*, which often encounters *A. franciscana* only, remains specialized across the board.

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