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Visioconférence Jitsi Meet

MULTIPLE HYBRID ORIGINS OF INVASIVE DIPLOID AND POLYPLOID ASEXUAL LINEAGES OF THE BRINE SHRIMP *ARTEMIA*

par

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🔍 Understanding the mode of origin of asexuality is central to the long-lasting debate regarding the evolution and maintenance of sexual reproduction over asexual reproduction. Asexual lineages are often considered to have reduced genetic variation which prevents their adaptation to new ecological conditions and hinder their long-term persistence when competing with sexuals.

🔍 Two decades ago, *Artemia parthenogenetica* was considered as a rare case of long-term asexuality, but more recent evidence suggest that asexuality evolved multiple times in the genus. However, the mode of origin of and genetic relationship between diploid and polyploid asexual lineages have never been elucidated. In this study, we first clarified the relationship between diploid and polyploid *Artemia parthenogenetica* and their Asian bisexual close relatives, using both mitochondrial, nuclear and flow cytometry data of reference samples. We then tested for the presence of rare sex events investigating potential discordances between mitochondrial and nuclear markers. Interestingly, we found that multiple events of sexual reproduction occurred between diploid asexual lineages and bisexuals, which likely resulted in the independent formation of one triploid and one tetraploid asexual lineages. Furthermore, pentaploids likely evolved following hybridization between a tetraploid clone and either a bisexual male or a rare male produced by diploid asexuals.

🔍 This study contributes to withdraw *Artemia parthenogenetica* from the list of 'ancient asexual scandals', and revealed that the production of rare male in other supposedly 'asexual' species is likely to hide widespread sexual interactions between asexuals and related sexual lineages.