

**SCIENTIFIC PROGRAMME
ABSTRACT BOOK**



#ECE2026Tours

Tracing Thermal Adaptation in *Aedes albopictus*: Evidence from a North–South Gradient in Europe

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Abstract

The Asian tiger mosquito (*Aedes albopictus*) has rapidly expanded across Europe, establishing stable populations from southern to northern latitudes. Understanding whether this species exhibits local thermal adaptation within its invasive range is crucial for better understanding biological invasions, improving predictive models of *Ae. albopictus* spread and for designing targeted control strategies. In this study, we investigate potential adaptive differentiation among *Ae. albopictus* populations collected along a latitudinal gradient spanning from southern Italy, northern Italy and central Germany. Laboratory colonies have been established for each of the three populations using either wild-caught females continuously introduced during the summer season or from sampled eggs. We quantified key life-history traits (e.g., development rate, survival, fecundity) under both constant and fluctuating temperature regimes (13°C–33°C), representing different ecological realities across Europe. By comparing performance across these thermal conditions, we aim to identify whether local populations exhibit divergent responses indicative of thermal adaptation. The results will provide empirical evidence on the role of thermal variability in shaping population-level differences, contributing to a better mechanistic understanding of *Ae. albopictus*'s invasive success under ongoing climate change.