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Dispersal, behavioral responses and thermal adaptation in *Musca domestica*.

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Behavioral traits can have great impact on an organism's ability to cope with or avoidance of thermal stress, and are therefore of evolutionary importance for thermal adaptation. We compared the morphology, heat resistance, locomotor (walking and flying) activity and flight performance of three European populations of *Musca domestica* (Diptera: Muscidae) originating from different thermal conditions (Spain, Switzerland and Denmark) at benign and high temperatures. Spanish flies showed higher heat resistance compared to the Swiss and Danish populations. Similarly, at the high temperature (41.5°C) Spanish flies flew longest and Danish flies shortest. Swiss flies were the most active in terms of locomotor activity at the benign temperature (24°C), whereas the Spanish flies were able to stay active longer at the high temperature (43°C). Population differences in behavioral traits and heat resistance were obtained with flies held for several generations in a laboratory common garden setting, therefore we suggest that exposure to and avoidance of high temperatures under natural conditions has been an important selective agent causing the suggested adaptive differentiation between the populations.