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Molecular evidence of genetic differentiation among sympatric colour morphs of the common wall lizard (*Podarcis muralis*)

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Colour polymorphism is widespread in reptiles, but the mechanisms underlying the evolution and maintenance of alternative morphs are still poorly understood. Among lizards, several studies have been carried out to investigate the adaptive value of alternative colourations, which are often associated with several life-history traits (immunological, physiological and behavioural) as a result of correlational selection favouring co-adapted gene complexes in a sexually-selected runaway process. The common wall lizard (*Podarcis muralis*) shows three pure ventral colour morphs (white, yellow and red) and two intermediate, di-chromatic phenotypes (yellow-red and white-red) in both sexes and within the same population. Colourations are expressed at the time of sexual maturity and no continuous variation occurs among them. Moreover, they do not shift to one another once expressed; strongly suggesting that morph might be, at least partially, genetically determined. Previous studies have shown that morphs differ in immunological, haematological and physiological traits, as they play alternative strategies to achieve different fitness optima to cope with selective pressures. Recently, evidence of non-random mating has been provided both by field observations and captive-breeding experiments. In theory, positive assortative mating within the same morph and selection against hybrids could increase the potential for polymorphism in driving divergent evolution among morphs, as a first step towards even-



tual reproductive isolation and sympatric speciation. We selected hypervariable molecular markers (8 microsatellite loci) to study genetic differentiation among morphs in three northern Italian populations, by estimating and comparing allele frequencies and deviation from the Hardy-Weinberg equilibrium between morph classes and in the populations considered as single panmictic units. Observed variation in the genetic composition of morph classes within each population matched previous evidence of non-random mating between colour morphs, suggesting intra-specific genetic divergence driven by colour polymorphism in common wall lizards.

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