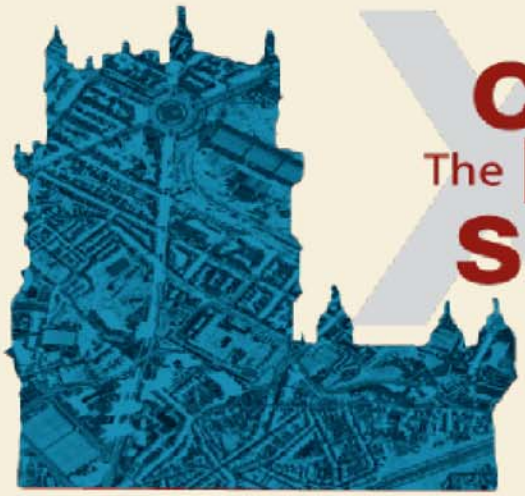

XIV Congress of The European Society for Evolutionary Biology

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Symposia

Symposium

21. The Evolution and Maintenance of Heritable Colour Polymorphsims: from Ecology to Genomes

20 and 21 August

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FLOWER COLOUR MORPHS OF *IRIS PUMILA* DIFFER IN THE AMOUNTS OF HSP90 AND PHENOLIC COMPOUNDS

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Natural populations of the dwarf bearded iris, *Iris pumila*, display a striking flower-colour polymorphism. It was noted that the combination of fluctuating temperatures and the varied attractiveness of diverse colour morphs promotes a stable coexistence of multiple colour variants in a population. We have quantified the amounts of Hsp90 and the antioxidants, anthocyanins and total phenolics, in *I. pumila* flowers. These molecules impact abiotic stress tolerance, ultimately influencing the fitness of individual plants. A total of 100 clones that were raised in a common garden and assessed to different colour classes (dark violet, violet, light violet, dark blue, light blue, yellow/white) were examined. The amounts of two Hsp90 forms, inducible (Hsp90a) and constitutively expressed (Hsp90b) proteins were lowest in yellow and white flowers as compared to other colour classes. In blue flowers, the concentration of Hsp90a was observed to decrease gradually when proceeding from light blue to dark blue variants, whereas an inverse trend was observed in violet-coloured flowers. The concentration of anthocyanins was notably low in white/yellow flowers and in the blue and violet colour classes it progressively increased from light to dark floral morphs. The amounts of total phenolics were highest in the white and yellow colour morphs; they were relatively high in all of the blue variants, and gradually increase from light to dark colour morphs in the violet class. These results suggest that each *I. pumila* colour genotype is responsible for the production of unique amounts of Hsp90 and phenolics that protect cellular homeostasis under fluctuating temperature conditions within populations.