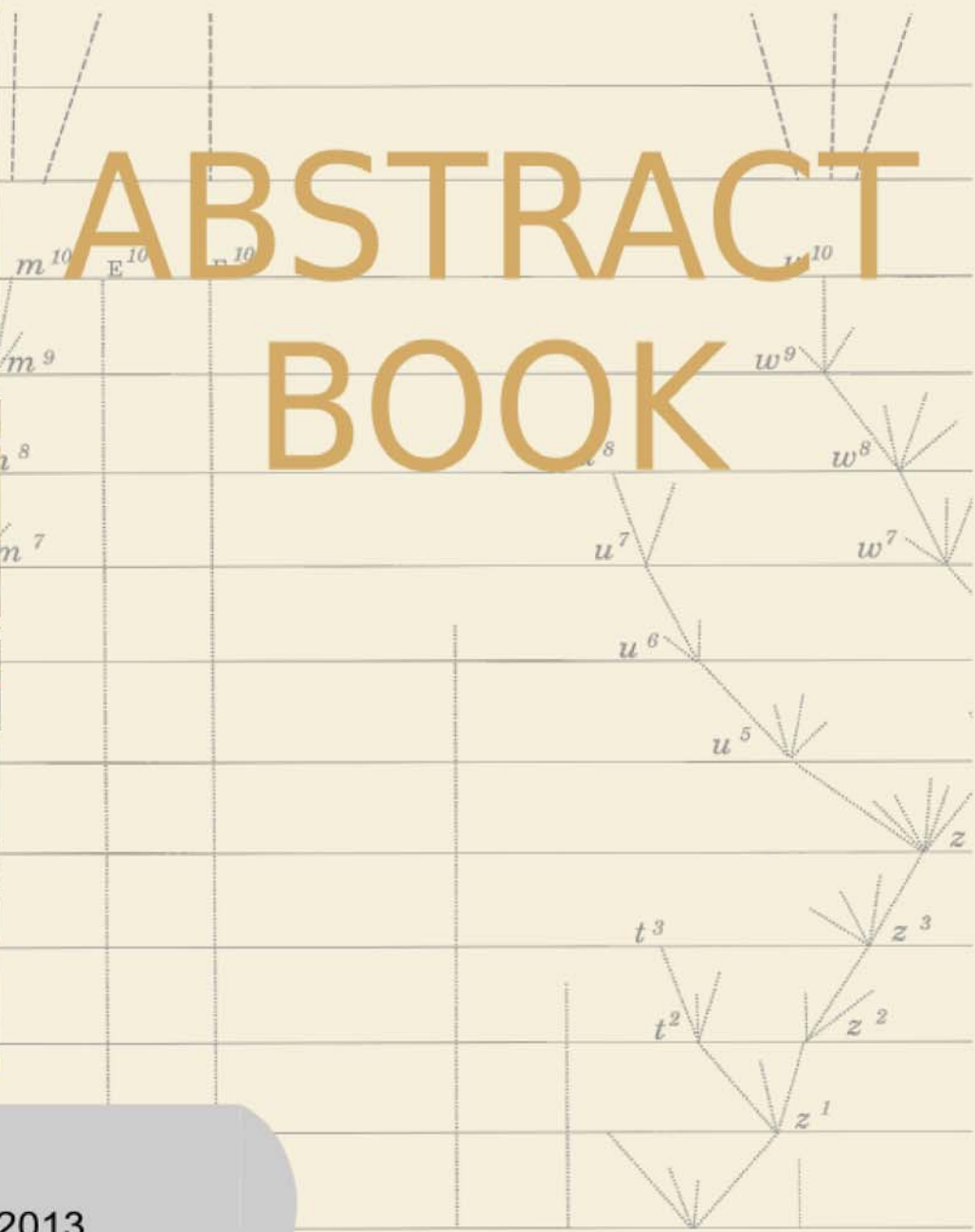


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Congress of The European Society for Evolutionary Biology

19 to 24 August 2013
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ABSTRACT BOOK

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**ORAL PRESENTATION ABSTRACTS AND LIST
OF POSTERS**

14th Congress, Lisbon, Portugal, 19 - 24 August 2013

Symposia

1. Experimental Evolution on Empirical Fitness Landscapes	13
2. Selection and Evolution in Natural Populations	40
3. Molecular Evolutionary Innovations	129
4. Evolution of Symbiotic Interactions in Communities: Novel Approaches	160
5. Phenotypic Plasticity: Mechanisms, Ecology and Evolution	202
6. Evolutionary Consequences of an Early Germ-Soma Segregation	303
7. The Nature and Mechanisms of Evolution of Species Recognition Systems	314
8. Evolutionary Significance of Epigenetic Variation	334
9. Genetics and Genomics of Host-Parasite Coevolution	350
10. Genomics and Experimental Evolution	413
11. Advances in Quantitative Approaches to Recent Evolutionary Change in Humans	448
12. Studying Multigene-Family Evolution in the Post-Genomic Era: Towards a Population Genomic Approach to MHC Evolution	473
13. Rapid Evolution and Population Genetics	498
14. Non Genetic Inheritance	554
15. Attack and Defense: Evolutionary and Ecological Consequences of Individual Variation	577
16. Evolutionary Biology in China	639
17. Linking Genome Evolution at Different Time Scales	653
18. Evolutionary Demography	686
19. Evolutionary Consequences of Deception	727
20. Mechanisms of Trade-offs	744
21. The Evolution and Maintenance of Heritable Colour Polymorphisms: from Ecology to Genomes	792
22. The Evolution and Genetics of Drug Resistance	819
23. Genomic Islands: Their Role in Adaptation and Speciation	858
24. Unifying Paleobiological and Comparative Perspectives on Character Evolution	918
25. New Directions in Sex Role Research	936
26. The Genomic Architecture of Adaptive Traits: do QTNs Generally Exist?	982
27. Evolutionary Conservation: the Applied Side of Evolutionary Biology	1003
28. Non-Genetic Transfer of Immunity Across Generations – Evolution and Underlying Mechanisms	1058
29. Actively Learning Evolution: Methods and Resources	1078
30. Phylogenetics and Phylogeography	1088
31. Development, Behaviour and Evolution	1231
31. Climate Change and Evolution	1301
33. Population Ecology	1348
34. General Symposium	1415

Symposium

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

20 and 21 August



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

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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.