

Molecular phenotyping uncovers differences in basic housekeeping functions among closely related species of hares (*Lepus* spp., Lagomorpha: Leporidae)

Kateryna Gaertner¹, Craig Michell², Riikka Tapanainen², Steffi Goffart², Sina Saari¹, Manu Soininmäki², Eric Dufour¹, and Jaakko Pohjoismäki²

¹Tampere University

²University of Eastern Finland

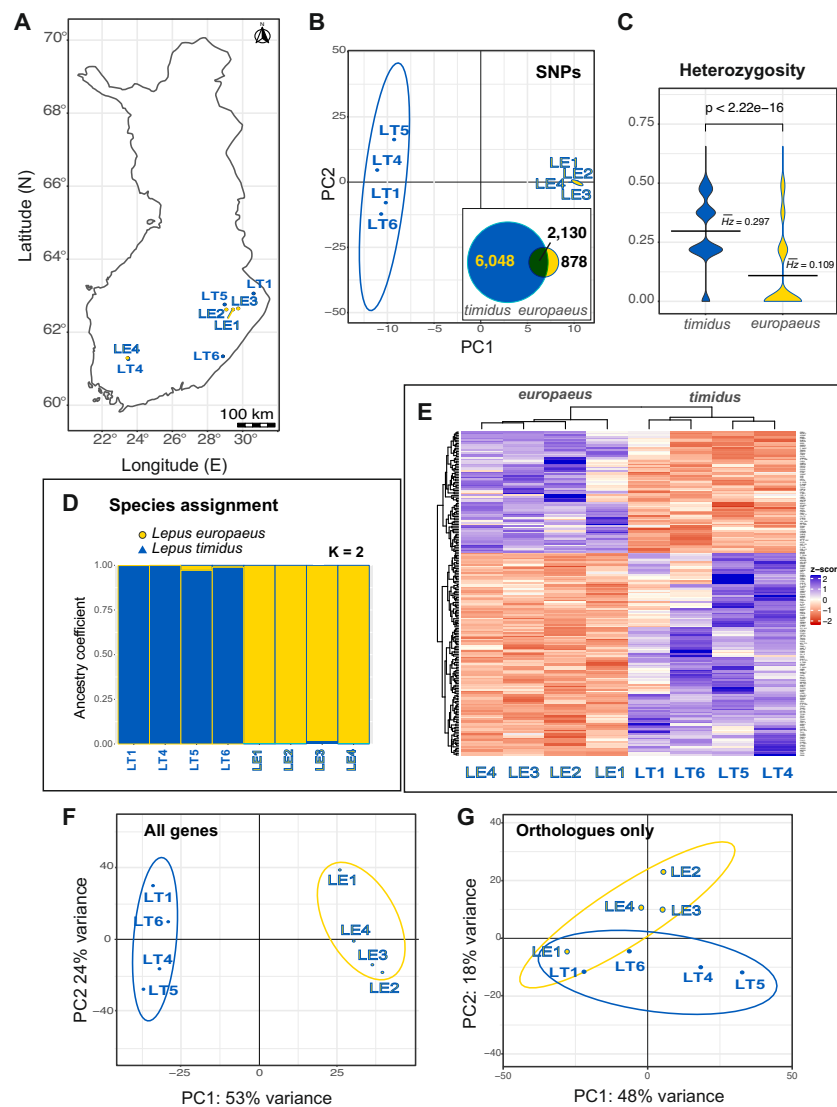
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Abstract

Speciation is a fundamental evolutionary process, which results in genetic differentiation of populations and manifests as discrete morphological, physiological and behavioral differences. Each species has had its own evolutionary trajectory, formed by many types of selection pressures and random drift, making the association of genetic differences between the species with the phenotypic differences extremely difficult. In the present study, we have used an in vitro model to analyze in depth the genetic and gene regulation differences between fibroblasts of two closely related mammals, the arctic/subarctic mountain hare (*Lepus timidus* Linnaeus) and the temperate steppe-climate adapted brown hare (*Lepus europaeus* Pallas). We discovered the existence of a species-specific expression pattern of 1,623 genes, manifesting in differences in cell growth, respiration, and metabolism. Interspecific differences in the housekeeping functions of fibroblast cells suggest speciation acts on fundamental processes, even in these two interfertile species. Our results help to understand the molecular constituents of a species difference on cellular level, which could contribute to the maintenance of the species boundary

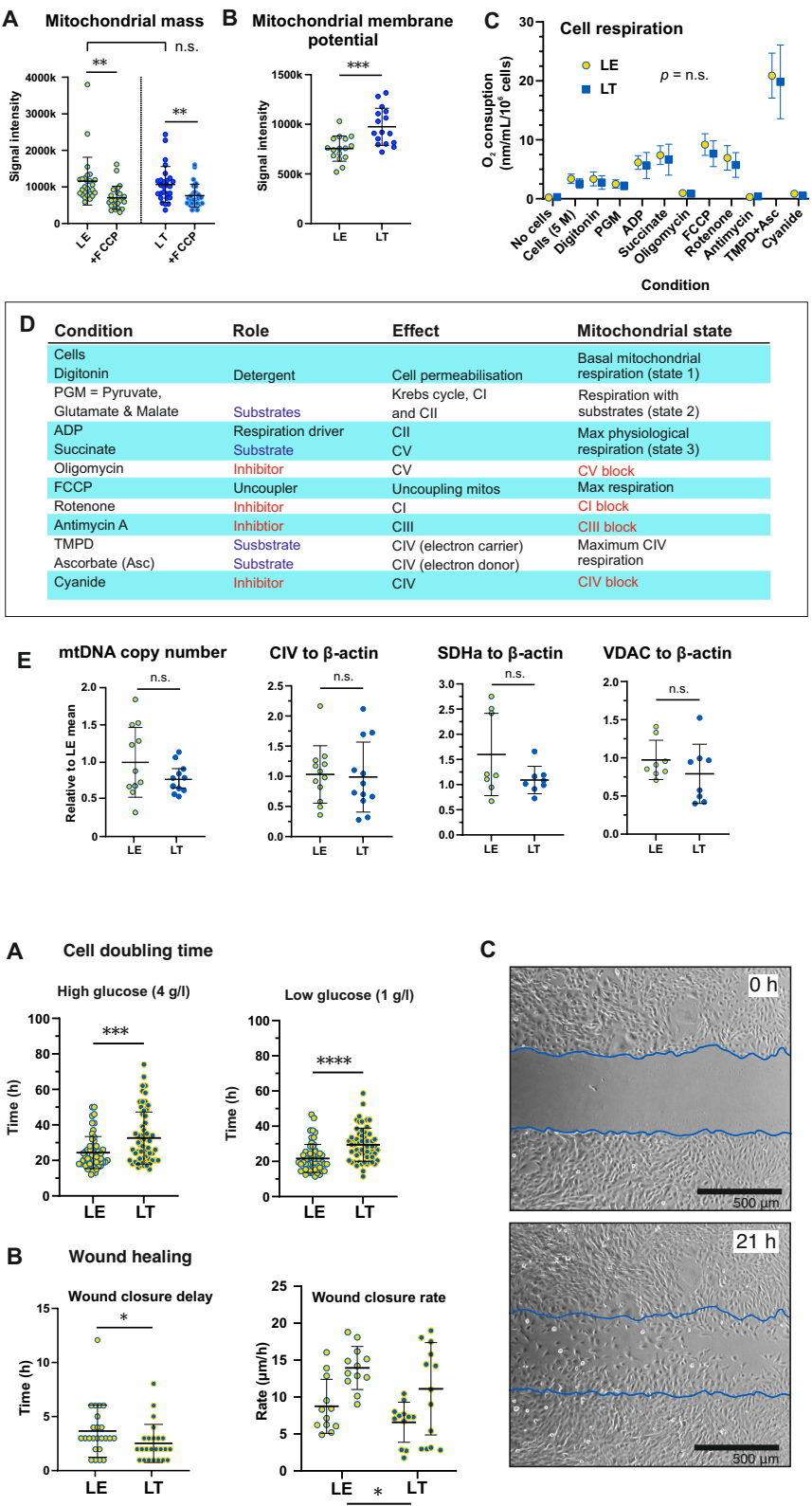
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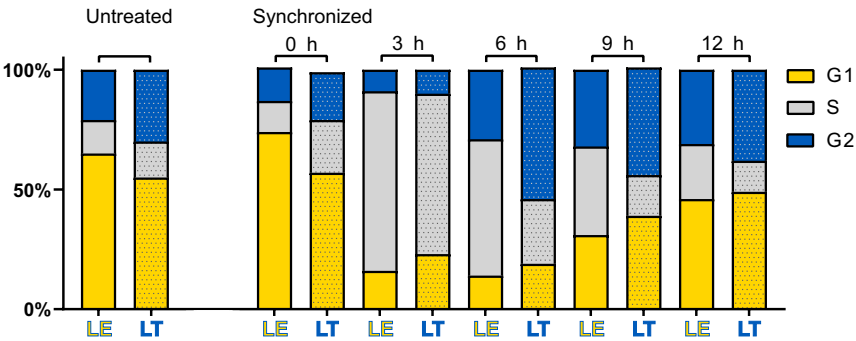


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A Cell cycle phase distribution



B

