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**CONGRES EDENext 2015: Heraklion**

**Poster’s title:**

Apparent absence of a barrier to nuclear gene flow in Central Finland between mitochondrial lineages of the bank vole (*Myodes glareolus*)

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**Abstract (max. 350 words)**:

Combining nuclear and mitochondrial DNA (mtDNA) markers has highlighted the limitations of studies using only mtDNA markers to depict phylogeographical histories. These last ten years, many conflicting geographic patterns between mitochondrial and nuclear genetic markers have been identified, hereafter namedmito-nuclear discordance. The most common form of such discordance is ‘asymmetric movement of mtDNA’ that can go up to a complete replacement of the mtDNA of the native taxon with selective advantages of the introgressed mitochondrial type. Previous studies showed that bank voles in Finland exhibit two mtDNA clades: the ‘*GLA’* mitotype (mtDNA of *Myodes glareolus*) that is specific to Southern Finnish bank voles, and the ‘*RUT’* one (mtDNA of *M. rutilus*), which is common in Northern Finnish bank voles and *M. rutilus.* The replacement of the northern Finnish bank vole (*Myodes glareolus*)’s mtDNA with that of the northern red-backed vole (*M. rutilus*) could be explained by a selective process favouring the mtDNA of *M. rutilus*, a species that is more adapted to cold temperatures.

In this study, we examined whether some cyto-nuclear discordance existed in the Finnish bank voles. We used extensive sampling (441 samples of *M. glareolus* and 39 of *M. rutilus*) and diverse genetic markers differing in rate of evolution and parental inheritance (one mitochondrial marker, the cytochrome *b* gene, and 17 unlinked microsatellite loci) to assess the reproductive isolation of these two mitochondrial lineages. Genetic analyses revealed discordance between the mitochondrial and nuclear data. Mitochondrial analyses confirmed the occurrence of two major haplotypes in Finnish bank voles that correspond to two distinct mitotypes (‘*GLA*’ & ‘*RUT’*). By contrast, clustering analyses based on the 17-microsatellite loci failed to separate specimens from both mitotypes. Moreover, we could not find any spatial genetic structure among vole populations, except isolation by distance. This particular pattern hides any signal of barrier to gene flow at the level of the mitochondrial contact zone in Central Finland. The mito-nuclear discordance observed therefore raised the question of an alternative hypothesis to the ‘contact zone’ one due to post-glacial recolonisation history. A scenario of mitochondrial introgression is proposed.