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Mitochondrial genome, transcriptome and editome in the angiosperm *Silene vulgaris*

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An extraordinary variation in mitochondrial genomes at within-species level exists in the angiosperm *Silene vulgaris*. The mitochondrial genomes of four analysed haplotypes of *S. vulgaris* show a distinct gene order, variable intergenic regions, they even differ in the number of coding genes. A high sequence variation in gene flanking regions among mitochondrial genomes is associated with the variation in regulatory motifs controlling the expression of mitochondrial genes. This polymorphism raises a question, how are the variable regulatory regions understood by various nuclear backgrounds. To provide the first insight, we have analyzed the transcription of the atp1 gene, encoding the subunit 1 of ATP synthase, a crucial enzyme in an energetic metabolism of a any eukaryotic cell. We found the variation in transcription profiles depending on the nuclear genes introduced by the pollen donor. We have generated the whole transcritome of *S. vulgaris* KOV based on SOLID data. We found numerous‘ islands of transcription‘ in intergenic regions, sometimes corresponding to predicted ORFs. In contrat, we detected very low expression of some genes (e.g. rpl5) suggesting that a nuclear copy took the leading role, despite of no sequence signs of pseudogenization. We have also produced the complete list of editing sites including intergenic regions and introns, which we called editome.

The highly rearranged mitochondrial genomes with a diversity of *cis*- regulatory motifs make *S. vulgaris* an excellent model for the study of mitochondrial gene expression in plants.

Biography

Helena Storchova has completed her Ph.D. at the age of 27 years from the Institute of Molecular Genetics, Czechoslovac Academy of Sciences, Prague. She is the head of Plant Reproduction Lab, Institute of Experimental Botany AS CR in Prague, Czech Republic. She has published more than 35 papers in reputed journals and is serving as an editorial board member of the international journal *Biologia Plantarum.*

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