Abstract:

Postnatal adaptation of neonate to extrauterine life is among others dependent on effective mitochondrial biogenesis during fetal development. Therefore the study of mitochondrial biogenesis on molecular and biochemical level may improve the care of very premature neonates, especially critically ill premature neonates.

This thesis has been worked out in The laboratory for study of mitochondrial disorders (Department of Pediatrics, 1st faculty of Medicine, Charles University in Prague). The thesis is based on molecular genetic analyses, which are focus on characterization of expression of gene involved in mitochondrial biogenesis including gene of oxidative phosphorylation system (OXPHOS) and on changes in mtDNA content during human fetal development.

The results than enable :

- Efective analysis of the mRNA expression level by quantitative real-time PCR method in fetal tissues.
- Analysis of the changes in the mtDNA content in different fetal tissues
- To understand and to explain the tissue-specific differences in expression of the OXPHOS genes and of the genes involved in mtDNA transcription and in regulation of mtDNA content during second trimester of gestation.