CHAPTER VI

CONCLUSION

In the present thesis, I have studied on mammalian copper chaperone, Cox17p. In CHAPTER II, the genomic structure of the mouse *COX17* gene was described. The mouse *COX17* is a single gene that spans ~6 kb, consists of three exons, and is mapped to the center of chromosome 16. There were no genetic linkages between *COX17* and the other respiratory genes such as *SCO2* which had already been reported as a responsible gene of the cardioencephalo-myopathy with severe reduction of CCO activity.

The analysis of promoter region of *COX17* gene is presented in CHAPTER III. The reporter gene assays (luciferase assays) and EMSAs revealed that both Sp1 and Nuclear Respiration Factors (NRFs, NRF-1, 2) were involved in basal transcription of the *COX17* gene. The transcription of cytochrome c, *COX4*, *5b*, *6c* and *7a* are also regulated by both the Sp1 and NRFs indicates that *COX17* gene expression might be regulated by common machinery of the respiratory genes.

In CHAPTER IV, the generation and analysis of mice with the targeted disruption of *COX17* loci are presented. The *COX17* (-/-) embryos normally developed till E6.5, but after E7.5, they were gradually retarded and died between E8.5 to E10.5. The CCO activity of the *COX17* (-/-) embryo was reduced severely, while the other respiratory enzymes were normal. Finally, I elucidated that Cox17p is essential for the activation of CCO and plays an important role in the embryonic development in mammalian system.