SUMMARY AND CONCLUSION
The results presented in the thesis can be summarized as follows:

1. Quantitative and qualitative analysis of urinary GAGs helped in the classification of the 53 clinically suspected MPS patients to their MPS types.

2. Lysosomal enzyme assays confirmed 7 MPS I, 8 MPS II and 5 MPS VI patients out of 53 analyzed. The remaining 33 were confirmed to be non MPS patients, who may be suffering from other lysosomal disorders / genetic disorders.

3. The reanalysis of urinary GAGs from enzymatically confirmed patients revealed that a combined qualitative and quantitative analysis is needed to avoid false positive and false negative results.

4. The estimation of α-L-iduronidase activity in the 30 obligate heterozygotes have shown that this enzyme estimation can be used in carrier detection in our population.

The higher percentage of consanguinity among the MPS families suggested that this may be the contributing factor for increasing the percentage of these rare single recessive gene disorders in this population.

6. No conclusion could be drawn from the community data. It is only a documentation of results.
The mutational analysis of IDUA gene showed that exons II, V, VI, VII, VIII, XIII and XIV were found to be mutation negative in all the 16 MPS I patients analyzed under our experimental conditions.

Exon IX of IDUA gene had two intronic and two exonic polymorphisms. Of this, one is a base insertion and the other three are single nucleotide polymorphisms.

a. The polymorphism, insertion of c in intron 8 has been reported in a Iranian patient. For the first time we are reporting this in normals.

b. The three nucleotide changes in exon IX have already been reported in other populations but the sequence variation c → t in intron 9 is a novel one being reported for the first time.

Exon X had three sequence variations, two intronic and one exonic. All three are single nucleotide polymorphisms already reported in patients in other population. We are reporting these polymorphisms for the first time in normals.

The point mutation L 490 P reported to be common among Asian Indian population was found to be absent in the 16 MPS I patients studied, suggesting that this may be absent in our population.
MPS being a genetic disorder, no cure is available at present. Various therapies like enzyme replacement, bone marrow transplantation and gene therapy are being experimented world over with little success at present. Hence presently to alleviate the human suffering, the options available are carrier detection, prenatal diagnosis and genetic counseling.

The phenotype – genotype correlation is very much needed for the selection of patients for therapy. The biochemical analysis like enzyme assay do not throw any light on the phenotype – genotype correlation. Hence mutational analysis is a must.

DNA based diagnosis is the only definitive test for determining carrier status and also for the selection of patients for therapy protocols. In this present study, seven polymorphisms / sequence variation have been identified in the IDUA gene of South Indian population. Further study has to be undertaken to find out the disease causing mutation in South Indian MPS I patients.