Acknowledgement

It would not have been possible to write this doctoral thesis without the help and support of the kind people around me, to only some of whom it is possible to give particular mention here.

Foremost, I would like to express my sincere gratitude to my advisor Prof. Dr. Ravi Parkash for the continuous support of my Ph.D study and research, for his patience, motivation, enthusiasm, and immense knowledge. His guidance helped me in all the time of research and writing of this thesis. I could not have imagined having a better advisor and mentor for my Ph.D study.

Besides my advisor, I would like to thank Prof. Dr. Minakshi Vashist (Head of the Department) and Prof. Dr. J. P. Yadav, for their encouragement, insightful comments, and timely help.

In addition, I would like to thank my seniors Dr. Seema Ramniwas, Dr. Vinita Sharma, Dr. Bhawana Kalra, Dr. Shama Singh, Dr. Jyoti Chahal, Dr. Kapil Dev & Dr. Dau Dayal which helped me in my research work. Many thanks to my other senior fellow, Dr. Manju, Sangeeta, Khushboo in the Department of Genetics for their encouragement. Thanks to my supportive friend, Divya, Babita & others who made the lab a friendly environment for working. I am also thankful to Ankita, S. Kundu for various help related to my research problem.

I am also grateful to U.G.C (New Delhi) for Rajiv Gandhi National Fellowship during the course of my research work as without their financial assistance it would not have been possible for me to complete this thesis.

I would also like to thank Shri Prem Singh ji, Shri Jitender Singh ji and Smt. Pushpa ji for timely assistance in carrying out all the official work. I am also thankful to Mr. Manjeet Kaushik for computer help.

I would like to thank my family, my father especially my mother for always believing in me, for their continuous love and their supports in my decisions. Without whom I could not have made it here. She was always there cheering me up and stood by me through the good times and bad. I am also thankful for my brother Chanderparkash and his wife Seema for encouraging me with their best wishes. I am also thankful for my sweet niece Henna for her innocent love.

Finally, I would like to thank my sister (Mayuri) as she has given me confidence and motivated me in so many ways.

Dated: Chanderkala