Acknowledgements

I take this opportunity with much pleasure to thank all the people who have helped me through the course of my journey towards producing this thesis. The work in this thesis was carried out at Center for DNA Fingerprinting and Diagnostics (CDFD), Hyderabad. My utmost gratitude goes to my thesis advisor and mentor, Dr. Ranjan Sen for his constant guidance, help and support. It has been a pleasure and a privilege to conduct research under his able guidance. His hard working nature and persistent attempts to solve the problems really motivated me. He was always accessible and willing to help me in my research; and many a times was more worried about my work and the direction it was going to than I myself was capable of understanding. I thank him for providing a motivating, enthusiastic and critical atmosphere throughout the period of my work. I also thank other members of doctoral committee Drs. Akash Ranjan and S.C. Mande for their helpful suggestions and constructive criticism.

I gratefully acknowledge Dr. J. Gowrishankar, director CDFD for his advice and constant encouragement. I am grateful to the Vice Chancellor, Registrar and the Head, Dept. of Biotechnology of the Manipal University for allowing me to register as a graduate student. I am also very grateful to Dr. Shekhar C. Mande, head Structural Biology lab and Dean, Academics section during my tenure as a graduate student in CDFD, for his constant motivation, understanding and help throughout this work. I had an opportunity to discuss my work with Drs. Robert Weisberg, Max Gottesman, Sankar Adhya, and Rachid Rahmouni; and I would like to thank each one of them for taking interest in my work and giving me useful suggestions. I acknowledge Drs. Anupama, Abhijeet and Hari Narayanan for their advice and willingness to share their ideas with me, and helping me with various in vivo experiments during this research. I am grateful to the Department of Biotechnology (DBT), India for providing me with Junior and Senior research fellowships, during the period of my work. The research at our laboratory has been supported financially by research grants to Dr. Ranjan Sen from NIH, USA, Wellcome Trust, UK and CDFD. I would like to express my gratitude to all these institutions.

Thanks are due to my lab mates with whom I share tons of fond memories. My seniors, Anoop, Bibhusita and Jisha taught me new techniques and helped me to work without any trouble especially during my initial days in the lab. Anoop has been someone I looked up to, for he was so disciplined and hard working. Bibhs has been one of my closest friend and confidante, and was very caring and loving. I admire Jisha for her strengths. My very young and dynamic juniors, Amitabh, Rajesh, Saurabh, Zuhaib and Vishalini contributed to a very pleasant working atmosphere, providing for some much needed humor in what could have otherwise been a somewhat stressful laboratory environment. Amitabh has been a close buddy in lab, spreading positivity all around, always enthusiastic and ready to help. Other past and present lab members that I have had the pleasure to work with or alongside are Dipak, Nisha, Shalini, Shrutika, Kalyani and Debashish. I am grateful to Nancy and Shalini for all the efforts they have put in
while working with me during different points of time in this project and to a very sweet, charming Muna Aisha Khan, the summer trainee who worked along with me. I am especially grateful to Nancy, Gowresh and Sapna for their sincere efforts in organizing the lab and for all the help provided by them in carrying out the experiments. Savita, who has recently joined the lab, is a pleasure to be with. Many thanks to all my friends here at CDFD, who offered an enthusiastic environment in academia and otherwise, maintaining a healthy balance between work and play. Nora and Shubhada are the best friends that one can possibly have, made me feel at home here in Hyderabad, have been there with me through thick and thin, and it is impossible to thank them in words. I am also thankful to my colleagues; Rohan and Neelima; my juniors Bhavik, Siddharth, Garima, Deepa, Shashi; and my seniors; Akif, Pankaj, Uma, Sandeep, Debashree, Tabrez bhai, Jyoti, Shivalika, Jamshaid, Vijay and Vishal. My sincere thanks extend to my AMU clan here at CDFD: Tabrez bhai, Nazia, Adeel, Aanisa, Zuhaib, Amir and Mubashshir. Stay at CDFD hostel could never have been so comfortable and fun filled without the love and care shown by Tabrez bhai and Adeel, who have been my friends and brothers; Nazia, who always gave me so much respect; and Zuhaib, who added a ‘Ji Apa’ to everything I said! Am also grateful to Dr. Gayathri Ramakrishna, for being there for hostlers in times of need. And I am very fond of some excellent staff members that CDFD is blessed with: Punitha ma’m, at helm of student affairs, makes a student’s life so easy; Moiz bhai is ever so considerate about our electrical woes and soaring temperatures; Azgar ji, Sajid ji, Yusuf ji and Amjad ji drive us to and fro with so much responsibility and a smile.

I am grateful to my mother, Anjum Raza, for her love and support, and for encouraging me to be as ambitious as I wanted to be. I am deeply indebted to my maternal uncle, Mansoor Ali Khwaja, who has been a father figure in my life after my papa’s sad and sudden demise during my early teenage; my grandfather, Khwaja Jameel Ali, who made me feel very strong inspite of his delicate health; and my maternal aunt, Sheezy Shams, for being a great friend and advisor. It is their support and prayers that has helped me to accomplish whatever little I have so far achieved.

I possibly cannot express my gratitude for my husband, Khalid Hussain Qadri, in words. His unconditional love, his encouragement, his understanding, his rock solid support and his sacrifice is what made it possible for me to stay here in Hyderabad, thousands of miles away from him in Abu Dhabi, for 2.5 years after my marriage, and finish this work. I dedicate this work to him, to honour his love, patience, and support during these years. Finally, my greatest regards to the Almighty for bestowing upon me the courage to face the complexities of life and complete this project successfully.

Ghazala Muteeb