ACKNOWLEDGEMENTS

The work presented in this thesis would not have been possible without my close association with many people. I take this opportunity to extend my sincere gratitude and appreciation to all those who made this Ph.D thesis possible.

First and foremost, I would like to extend my sincere gratitude to my research guide Dr. (Mrs.) Mala Rao for introducing me to this exciting field of science and for her dedicated help, advice, inspiration, encouragement and continuous support, throughout my Ph.D. Her enthusiasm, integral view on research and her mission for providing high-quality work, has made a deep impression on me. During our course of interaction during the last six and half years, I have learnt extensively from her, including how to raise new possibilities, how to regard an old question from a new perspective, how to approach a problem by systematic thinking, data-driven decision making and exploiting serendipity. Every time, I meet her, I can feel “the fire in the belly” which she always talks about. I owe her lots of gratitude for having me shown this way of research. I am really glad to be associated with a person like Dr. Mala Rao in my life.

My special words of thanks should also go to my research co-guide Dr. (Mrs.) R. Seeta Laxman for her continuous support, guidance, cooperation, encouragement and for facilitating all the requirements, going out of her way. She has taught me another aspect of life, that, “goodness can never be defied and good human beings can never be denied”. Her constant guidance, cooperation, motivation and support have always kept me going ahead. I owe a lot of gratitude to her for always being there for me and I feel privileged to be associated with a person like her during my life.

I express my heart-felt gratitude to Mrs. Snehal More and her family for being with me as an elderly figure through out. Her scientific inputs, personal helps and friendly nature has always made me feel at ease with her and I could always look back on her for any support during my course of Ph.D. She and her family members have always been there for me with there supporting hands whenever I needed it the most. The work done with her as a co-worker has taught me how a person can succeed in achieving what seems impossible to begin with...thank you Mam for everything.

I am grateful to Dr. Yogesh Shouche from National Centre for Cell Sciences (NCCS) who gave me permission to work in his laboratory and use the facilities available there for DNA sequencing.

My heartfelt thanks to my seniors Dr. Anish, Dr. Vinod, Dr Arohi, Dr. Ajit and Dr. Sharmili for there guidance and moral support. They always helped me out when I got any difficulties or queries regarding experiments. My special thanks to fellow lab mates, Atul, Harish, Shalaka, Ashwini, Priya, Dheeraj, Sudarshan, Sarvanan, Dhananjay, Rajkumar, Padmavati, Tanajee, Ishwar, Gyan, Vishnu, Deepali, Rupesh, Arvind, Mehraj and Nilesh for always standing by my side and sharing a great relationship as compassionate friends. I will always cherish the warmth shown by them.

A special mention of thanks to my friends in NCL, Ambrish, Sachin, Atul, Aparna, Shiddarth, Umesh, Imran, Ashutosh, Arun, Manje, Sarvesh, Vipul, Akhiles, JP,
Shashidhar, Anil, Atul Thakur, Sagar, Nagraj, Sandeep and many more for their constant support and cooperation during my stay. Their timely help and friendship shall always be remembered.

My special regards to my teachers because of whose teaching at different stages of education has made it possible for me to see this day. Because of their kindness I feel, was able to reach a stage where I could write this thesis.

I must thank the office staff, Indira Mohandasan for her kind support throughout my tenure at NCL. I acknowledge Giri jee and Trehan jee who were always ready to give their timely help whenever required.

I owe my deepest gratitude towards my better half for her eternal support and understanding of my goals and aspirations. Her infallible love and support has always been my strength. Her patience and sacrifice will remain my inspiration throughout my life. Without her help, I would not have been able to complete much of what I have done and become who I am. It would be ungrateful on my part if I thank Lily in these few words. I am thankful to my son Shivansh for giving me happiness during the last one and half month of my studies.

A special thanks to my younger brother Rakesh, sister Priyanka, brother in law Rajeev and my sisters childern Nanhy, Mona and Omkar for their love and affection.

My heart felt regard goes to my father in law, mother in law, sister in law Mrs Nirupama and her family, Mrs. Madhumita and her family, Ms Vibha and brother in law Mr. Anand for their love and moral support.

As always it is impossible to mention everybody who had an impact to this work however there are those whose spiritual support is even more important. I feel a deep sense of gratitude for my grand parents, mother, father, who formed part of my vision and taught me good things that really matter in life. Their infallible love and support has always been my strength. Their patience and sacrifice will remain my inspiration throughout my life.I am also very much grateful to all my family members for their constant inspiration and encouragement.

I gratefully acknowledge Council of Scientific and Industrial Research, for providing me financial support and Director, NCL to allow me to carryout my research in this esteemed laboratory.

Finally, I am thankful to library staff and administrative staff of NCL for cooperation.

SHIV SHANKAR