



ACKNOWLEDGMENTS

I am heartily thankful to my guide, Prof. Rasheedunnisa Begum, whose expertise and guidance from the initial to the final level enabled me to develop an understanding of the subject.

It is very difficult for me to find apt vocabulary to express my indebtedness to Prof. S.S. Katyare, who encouraged me and convinced my parents to let me do Ph.D. This thesis would not have been possible without him.

I thank the Head of the Department, Prof. G Naresh Kumar and Prof. Sarita Gupta for providing the infrastructure and conducive departmental facilities for my research purpose, especially the computer room while thesis writing.

I owe my deepest gratitude to (late) Prof. Telang, Prof. Tara Mehta and Prof. L.J. Parekh, who have been lamp posts of the department and, Dr. Acharya whose friendly support encouraged at every step of my mission. I am indebted to all my teachers for their helpful suggestions and comments especially during annual presentations.

Special thanks to Prof. V. Nanjundiah (IISc, Bangalore) for giving me an opportunity to learn more about the model system. Thanks to Ritwick for giving tips for fluorescence studies. I would also extend my gratitude to Dr. Harish Padh and Dr. Bhavesh (PERD center, Ahmedabad), Dr. Sonal Baxi (GCRI, Ahmedabad), Dr. Shweta Saran (JNU, New Delhi) and Dr. Rekha Rai (ACTREC, Mumbai) who helped me to overcome a few hurdles that I faced during my Ph.D. I am thankful to DBT for funding the research project in the lab.

I am grateful to the administrative staff of the department for facilitating my work in many different ways. Pethe sir, a fatherly figure always provided me a patrimonial snug in the department.

I thank Shajil for being a guiding senior without imposing his seniority and I owe parts of my thesis to my MSc dissertation students (Shalmali, Jayesh, Dhaval, Payal, Shibi, Kaushal and Milan). I also thank my other labmates.

I would like to show my gratitude to Laxmi Didi, Chirayu, Prakash, Anubha, Nidheesh, Akhilesh, Jisha, Divya, Prashant, Vikas, Gopit, Sonal Madam, Praveena Madam, Jitendra, Kavita, Chanchal, Prashant, Hemanta, Namita Didi and Mukta Didi for their direct and indirect support. Lunch group-Swapnali, Hiral, Mrinal and Rishikesh made the lunch breaks joyous in the real sense of the term with their lively discussions. Karishma and Radha, like little sisters

provided me sweet sentimental warmth. Humourous interventions make the life sweeter. Maulik and Keyur-next door neighbours, never let me feel the lack of it. I thank Hiren Bhaiya, a master-key to most of the problems and also Tushar who looks like the former's replacement.

A bunch of few friends needs a special mention. I thank Priyanka, Reena and Hemendra for being my supports in silent ways. Vijay and Purna were my first line of resort after hot discussions and hectic teaching, they helped dialyse my problems. I fall short of words to thank Niraj, Aditi, Iqbal and Jyotika. Niraj being my tea partner at every odd hour was a moral booster whether I used to be low or no. Aditi firstly was a research student idol but gradually turned into a chum. Jyotika and Iqbal were wonderful and entertaining lab partners, in that order.

As well begun is half done, Ramesh Bhai, John Kaka and Anil bhai made all my days glaring with their smiling faces and morning wishes.

The journey of Ph. D. has made me realize the real worth of my family, khalajaan, khalaammi, aunty and her family whose support was strong enough to hold me during the dire phases. **To them I dedicate this thesis.** Last but not the least, a bow to the Almighty.

Hina Mir