



## ACKNOWLEDGEMENT

Today, as I end this very important chapter in the journey of my life, which has opened up new & unprecedented openings, I sit back to visualize the twists & turns starting from the day one that has made me reach here. There is certainly a lot to share which would go beyond the appropriate scope of this section, but the chapter would definitely not have ended without the efforts & perseverance of a lot of people who were a constant source of inspiration & help. I would like to take the privilege of acknowledging all those who helped and supported in their own decisive ways.

I am indebted to the contributions & role of my research supervisor, Prof. G. Naresh Kumar, (NK Sir) in giving me the opportunity to be the author for this particular chapter of my life and also *for his precious guidance; scientific counseling; never-ending patience, optimistic approach and powerful words of encouragement.* Words can't be enough to describe his zest & zeal for science. Every scientific discussion would make me feel more & more motivated towards pursuing research. A special mention must be made here of the patience & support he has provided throughout, without which my survival would have been difficult. His farsightedness & vision has made Molecular Microbial Biochemistry Lab (MMBL) the most healthy place to work independently without any boundaries. Coming to the non-academic side, the daily tea sessions with him were a delight & will always remain among the most cherishable moments in my life. We could discuss anything from movies, sports to personal experiences (any topic in this universe for that matter) with him during our tea sessions. Once again, this thesis & my overall grooming would not have been possible without you, Sir.....Thanks A Lot!!!

I would like to express my deep gratitude to Prof. G. Naresh Kumar and Prof. Sarita Gupta (Former i/c Head of the Department) for providing the entire basic infrastructure including library, internet and other research facilities as well as for developing a great work culture with a sense of teamwork and healthy competition in the department

Next name that comes to my mind is of Dr. Archana Gayatri (Archana mam) from the Department of Microbiology. I would like to express my deep sense of gratitude towards her.

The research advice & solutions that I received from her were unparalleled beyond doubt & they always served to give me a sense of direction during my PhD studies. Thanks a lot for always being there to support anytime; be it in the form of providing the resources or finding instant solutions to stuck-up research problems. Above all, I always relished the delicious food served with a flavor of warm hospitality. There was a lot to learn from you apart from research.

I would like to express my gratitude to the Biochemistry Family as a whole (which includes all the alumini members & the teachers) whose efforts & hard work has allowed Department of Biochemistry to be recognized at the international level which makes it easy for people like me to avail a helping hand beyond the department premises.

I would like to extend my heartfelt thanks to all the teachers at the Department of Biochemistry including Dr. M. D. Jani, Prof. Rasheedunnisa Begum, Prof. Sarita Gupta, Dr. C. Ratna Prabha, Dr. S.R. Acharya, Dr. Jayshree Pohnerkar, Dr. Pushpa Robin, Dr. Devesh & Dr. Laxmipriya for allowing me to avail their lab facilities & ever ready to help in any hurdles during the course of my research.

I extend my warm & sincere thanks to Dr. S. R. Acharya for all the timely help & concern that u showed towards me during my Ph.D. I learned to take care of instruments & other department facilities from you & it helped me to understand that research includes responsibilities more than just your experiments.

Thanks are due to the members of the office including Mr. Pethe, Akshitaben, Shaileshbhai, Manishbhai, Vyasbhai, Rameshbhai (Nare), Sandeep, Balwant, Kiran, Anil, Babu kaka & all other office staff for their support & help in all the department & faculty official work. Thanks are also due to Bhartiben, for handling the project accounts efficiently & minimizing a lot of my project related university hassles. I also thank Milindbhai and Kirit bhai at the university for speedy execution of some of the university processes which needed to be approved at a short notice. Thanks to Jagdishbhai & Anilbhai for maintaining the lab cleanliness & keeping it hygienic for microbial work.

I deeply acknowledge Council of Scientific and Industrial Research (CSIR) for providing me with the SRF fellowship to pursue my doctoral work.

I would like to acknowledge the scientist who has provided me invaluable plasmids without that it would be very difficult to fulfill my research work. Prof. Yanashi provided pUZE3, Prof. Lehle provided pRT23.04, H. Schweizer for providing Tn7 integration vector and KS:INV was provided by Prof. Voegelé.

MMBL has been an integral part of my life all these years. It has been a cornerstone in my professional & personal development. I would like to thank my seniors Dr. Vikas Sharma, Dr. Aditi Buch, Dr. Divya Patel and Dr. Jisha Elias for their help and support. Sonal mam & Praveena mam were a delight during vacations with their presence felt as an elderly hand in the lab. I would like to thank my buddies Dr. Prashant Kumar, Hemanta Adhikary, Jitendra Wagh for their help, support and care. I would like to give special thanks to Kavita (Miss Yadav) being always available for help whenever I was busy with my classes or whatever was the situation, without her it's a very difficult task to complete this work. So a ton of thanks to Miss Yadav. Thank is also due to Alok for company in lab and Navsari visit, I wish him good luck for his PR, Vhb clones and Ph.D. Thanks are also due to my juniors Ashish, Sumit, Archana, Ujjawal and Ruma. I wish them Good Luck for their future endeavors.

It is a pleasure to thank my seniors at the Biochemistry department, Dr. Keyur Dave, Dr. Shajil Madhavan, Dr. Maulik, Dr. Hemendra, Dr. Jyotika, Dr. Heena, Dr. Neeraj, Dr. Hiren and Dr. Prakash who were a constant source of inspiration to reach out for goals which they have achieved & for the concern & ever readiness to help.

It was a pleasure to have research colleagues, Mrinal, Swapnali, Naresh, Mitesh, Iqbal, Purna, Vijay, Anubha and Nidheesh whose presence provided a stimulating & fun environment. Thanks to all of you..... Special thanks to Nidheesh for confocal studies.

Many thanks are also due to the new entrants, Krishma, Divya, Ankita, Varsha, Brinda, Rushikesh, Pranshu, Shoiab, Teena, Radha, Neeraj, Amrita, Akhilesh, Tushar, Abhay, Muskan, Regita. Wish you all; The Very Best.

I would like to thank the dissertation students who worked with me Kishu, Heena and Riddhi. Their presence provided a great helping hand.

My heartfelt thanks goes to the many research colleagues at the Department of Microbiology, Ruchi, Murli, Kuldeep, , Nandan, Subbu, Ketan, Sumant, Anoop and Darshan for making me feel one among them & all the most wanted timely help & support.

Special thank to Anoop for editing of this thesis and movies provided in hostel.

I am tempted to individually thank all of my friends which, from my childhood until post-graduation, have joined me in the discovery of what is life about & how to make the best of it. However, because the list might be too long & by fear of leaving someone out, I will simply say thank you very much to you all for being an integral Part of my life.

Finally, I would like to thank everybody whose dedication, prayers, & support had an important role in the successful realization of my thesis, as well as express my apology that I could not mention personally each & every one.

I cannot finish without saying how grateful I am with my family: parents, graney, sister and brother all of whom have given me a loving environment where to develop. Particular thanks, of course, to Vinay, my brother, and Priyanka, my sister for being the best listener, under stander & advisor. Lastly, & most importantly, I wish to thank my parents, on whose constant encouragement, unconditional faith & love. This task would not have been accomplished without their unflinching courage, support & conviction. To them I dedicate this thesis. Thanks are due to my near and dear ones and family members for having faith in my abilities.

Ultimately, I bow down to God! The Almighty, who bestowed me with a healthy mind and body as well as the strength to stand up to the expectations of my parents, teachers, family and friends.