Acknowledgments

This thesis is a result of years of research that has been conducted since I joined Dr Pradip Chakraborti’s lab. During this period, I have benefitted significantly from a plethora of people whose research contribution and support in the completion of this thesis deserves special mention. It would be difficult to distil the extent of their contribution into a few given words but I will make my best attempt to express gratitude to all in the following few paragraphs.

First and foremost, I would like to extend my gratitude to Dr. Pradip Chakraborti for the encouragement, supervision & support that he has extended through the course of my PhD work. His continuous assistance enabled me to develop a deeper understanding of the subject as well as gave me an extraordinary experience. His non-intrusive approach allowed me the freedom not only to ask random questions but also the flexibility to search out their answers. He is amongst a select bunch of people who gave me reason to persevere despite all the ups and downs that I have witnessed during the course of my PhD work. I will remain forever indebted to him for his contributions and will always remember the interactions I had with him.

Secondly, I would also like to take this opportunity to express my sincere gratitude towards Dr. Girish Sahani, (Director of IMTECH) for the excellent modular instrument & infrastructure facilities which have enabled the smooth execution of experiments and provided an ideal environment for working on this thesis.

Thirdly, I would like to extend my token of gratitude to Dr. S Kumaran for his valuable advice during various scientific discussions and for his availability during the tenure of this work. His ability to take out time on short notice was very useful to help steer the course of my work.

Additionally, I would like to acknowledge my heartfelt appreciation for the contribution of Dr. Purnanda Guptasarma for his constant encouragement and thoughtful words. I enjoyed the enthusiastic discussions with him and truly appreciate his warm greetings, articulate responses and most importantly his availability and generously extending his time when needed.

A note of thanks also goes to Dr. Av-Gay, at the University of British Columbia (Canada) for generously gifting the vector pSC-301 that enabled me to carry out the promoter studies which contributed to my work on this thesis. Thanks are also due to Dr. Dibyendu Sarkar, Dr. S. Karthikeyan and Dr. Ashish Ganguly, for their willingness to help whenever required. I would also like to thank Dr. Mani Luthra Guptasarma and Dr. Sandhya from PGIMER, Chandigarh who went out of their way to help me when I needed it the most.

I also greatly appreciate the efforts of the following individuals: Deepak Sir for the smooth running of the sequencing facility; Sharan madam for her help in CD studies and Samir Sir for the peptide synthesis work. Their presence and willingness to help ensures that we don’t need to worry about using all the above central facilities.
A special word of thanks goes to Rahul Bhaiya for the initial training that he provided to me and for his continuous assistance, support and significant insights during all the numerous discussions that we engaged in. Thanks also for teaching me how to function in the lab. I also appreciate Meghna ma'am and Vijaya ma'am for their company and their help during the time I was trying to settle in the lab.

Special thanks are due to my senior Haider sir for the help during those "dark days". I feel deeply grateful and privileged to have him as a senior not only for providing me motivation, but also for the unending kindness and moral as well as intellectual support that he provided; which enabled me to handle various challenges and problems of all kind throughout my PhD work. His contributions to the continuous scientific discussions, arguments and critical reading of the thesis are also highly appreciated - his headings off mistakes, misunderstandings or problematic gaps deserve special mention. Tea-time with him were moments that I will always cherish.

I would also take this opportunity to thank Gaurav, not only for his continuous help in work but also for his lively company. His jovial nature lightens up the environment no matter how gloomy the circumstances maybe. His support in reading the manuscript with great care and creativity is highly appreciated.

A note of thanks goes to the rest of my lab-mates and colleagues: Sandeep, Sanjay and Ghanshyam for their overall contribution to provide me with a constant learning experience that I have undergone here - without them things would not have been the same! I also thank Jankey ji, Kanchan Bhaiya, Batra Ma'am and Rajkumar Ji for their company. Help provided by Jankey ji and Kanchan Bhaiya for the smooth running of lab is deeply acknowledged.

A note of thanks also goes to Monica, not only for all the assistance she provided in the bioinformatics work but also for the long scientific & non-scientific chit-chat sessions.

I also deeply appreciate the warm welcome extended by Dr. Anuradaha Chakraborti, Michelle and Guttu, at various occasions and their ever willingness to join us at the lab get-togethers in spite of their busy schedules.

Most importantly, I remain ever grateful to my family - Mummy, Papa & Bhaiya, who have been (and continue to be) a constant source of motivation and strength in my life. Their sacrifices and hard work has helped me become what I am today. A sincere and heartfelt "thank-you" for my elder brother - Pulak, who has played a decisive role in encouraging me to undertake this PhD.

And last but not the least, a note of thanks to GG, not only for coming along at the right time, but for the very special person that he is. I appreciate the incredible amount of patience he had with me in the last few months and for showing me the 'light at the end of the tunnel'; and to think beyond my PhD. It's time to start on that list of things to do in Life - "Yes, after my thesis".
Further, it is a cliché to say that this thesis would not have been possible but for ... And sometimes such clichés are all but true. In writing this thesis, I have been benefitted from countless acts of support, encouragement and selflessness of numerous people around me. If I am ever feeling a bit low and get sceptical of this world, I will read this section of my thesis because it will remind me of the inherent kindness and generosity my friends have bestowed upon me. This experience as a PhD student would have never been possible without them: I feel deeply grateful and privileged to have been blessed with friends like Haider Sir in the lab and Ayesha as well as Uzma outside. Uzma, you are the best family that I could ever find in Chandigarh... thank you for listening to me, to help me rationalize my thoughts and for always making me smile. Well, most of the times for making me laugh! I will never forget what you have done for me, a big and sincere "thank you". Special thanks are also due to Neeraj for his company and good sense of humour, he is a great friend! I will really cherish the time I have spent with him and Uzma during my stay here. Special word of thanks are also due to the resident of my "pseudo-room" - Shweta ma'am - I really cherish the time I have spent teasing and being teased; thanks are due for tolerating and appreciating whatever I have cooked. I am also grateful to her & Soniya ma'am for their help during the difficult times. Thanks are also due to my room-mate, Anmol for her company. I would also like to extend my thanks towards Rahul Bhaiya, Ayesha, Jassi di, Divya ma'am, Sushma ma'am, Sanjoy sir, Arvind sir - they were here when I started this journey and their presence as well as absence really matters a lot at times since I would have been just another sad lonely PhD student without all of them! Lastly, I would also like to appreciate the warm chats with my juniors Neelam, Kaneez, Leena, Shrijita, Gunjan & others.

The cooperation and the kind help rendered by the entire IMTECH family, BIC, Instrumentation, Administration, Store and Purchase section is truly acknowledged. The contribution of all the mess workers deserves a special mention. Finally, an acknowledgement page is never complete without thanking the funding agency; hence I would like to extend sincere thanks to the Department of BioTechnology (DBT) for granting me the fellowship which led to this journey in the first place.

In conclusion, during these past years as a Ph.D student in Chandigarh, a number of people have been a source of inspiration, help and motivation time and again. Although I have tried my level best to acknowledge each one of them individually, there might be some folks who might have been overlooked. Hence, I take this opportunity to offer my sincere thanks to all those "Good Samaritans" - who at some point of time, in some way or the other, have been of great assistance in my journey till here.

Pavitra