“All have their worth and each contributes to the worth of the others.”

J. R.R. Tolkien

Acknowledgements

Interdependence is more important than independence. It becomes easier to achieve a goal, if there are people to help and support you. My stay at the National Chemical Laboratory for my doctoral study has been a great learning experience. Many people have directly and indirectly helped me in my research work and I will always remain grateful to them.

First and foremost, I am greatly indebted to my guide Dr. Sushama M. Gaikwad for her invaluable guidance and keen interest during the course of this investigation. I am very thankful to her for her unending support, encouragement, and valuable direction throughout my research work. She has given me the freedom to think, and work; and I shall cherish my learning experience with her. Without her dedication and persistence, it would have been impossible to complete my work successfully.

I am extremely grateful to Late Dr. M. Islam Khan for providing me an opportunity to pursue my doctoral study with him during the first two years. My initial work was conceived under his guidance. His scientific temperament, innovative approach, dedication towards research, and modest yet straightforward nature has inspired me the most. I will cherish invaluable memories of learning from him. The love and care shown by Mrs. Kausar Khan is fondly remembered.

I am also grateful to my senior Late Mr. Rohtas Rangera for providing initial starting material for my research work. Without his apt record keeping and accurate experimental hand, it would have been difficult to achieve the initial objectives of my research.

I am particularly thankful to Dr. Musti V. Krishnasrastry from the National Centre for Cell Science, Pune, for providing me the
freedom to use the facilities of molecular biology in his laboratory. The entire cloning and expression exercise was designed and carried out under his guidance. He has been extremely helpful during the entire course of my investigation by giving useful suggestions from time to time. I will cherish the learning experience gained from him.

I am thankful to Dr. C.G. Suresh for his keen interest and valuable suggestions during my entire work, and also for being a member of my PhD committee.

I am grateful to Dr. Sumedha S. Deshmukh and Dr. Siddharth H. Bhosale for their kind interest and technical help.

I would also like to extend my sincere thanks to Dr. Moneesha Fernandez, Organic Chemistry Division, NCL, and Dr. H. N. Gopi, IISER, Pune for the permission to use the CD facility.

I would like to thank Dr. Alok Sen, Organic Chemistry Division, NCL, for collaborating on our work on insecticidal activity of the lectin.

I am extremely thankful to Tulika for her invaluable and timely help in putting two of my chapters in proper shape. She has taught me several new techniques and has become a good friend.

I am also grateful to Krunal for carrying out the docking simulations of my lectin. It would have been very difficult to complete this task without his help. He has also been very helpful in putting my manuscripts in order and teaching me new techniques.

Special thanks are due to my dear colleagues Dr. Shashidhar, Dr. Ansary, Dr. Avinash, Sonali, Sayli, Ekta and Priya for their continuous support and maintaining a pleasant atmosphere for working in the laboratory. Ansary, Avinash, Dr. Geetha, Poonam, and Dr. Varsha were my pillars of strength. I have wonderful memories of the time spent with Varsha, Sonali and Ganesh. Ameya, Ekta, Manas, Sayli and Tulika have been extremely helpful during some difficult times and I am grateful to them for their love and concern.
I express my deep gratitude for my seniors Dr. Nagraj, Dr. Atul, Dr. Sreekanth, Dr. Shashidhar, Dr. Sajid, Dr. Shabab, and Dr. Urvashi for their relentless help and support during my stay at NCL.

I am thankful to my seniors from NCCS, Pune: Dr. Aejaz, Dr. Amita, Dr. Saumya, and Dr. Neesar for teaching me the basic techniques of molecular biology. Dr. Aejaz has been instrumental in helping me achieve the successful expression of the lectin gene. The technical help provided by Mr. Anil Lotke and my juniors Ekansh, Santosh and Shipra is greatly appreciated.

I am also thankful to my friends in the division: Dr. Manasi, Manisha, Neha, Nishant, Ravi, Pallavi, Parth, Prashant, Priyabrata, Ranu, Ruby, Sana, Sarika, Dr. Shadab, and Vithhal who have helped me in many ways.

My old friends from Baroda: Dr. Dhwani, Dr. Falguni, Inshiya, Jasmi, Dr. Meera, Dr. Prakash, Dr. Ruchi and Dr. Saurabh have always been a great source of inspiration.

My deepest sense of gratitude goes to Aai and Baba for their love, patience, kindness and blessings. This thesis is because of their immense belief in me. I am highly indebted to them and my younger sister Tejaswini, who has been very supportive and encouraging.

I am equally thankful to Mummy and Papa for the love and care showered on me. They have been very supportive of my research work and have encouraged me to work harder. I am also thankful to my brothers-in-law, Dr. Sukrit and Sumit for their support and love.

No words can express my gratitude towards my best friend, my husband, Dr. Suprit. He has been a constant source of motivation and encouragement. The task of completion of the thesis seemed unsurmountable with each passing day, but his crucial support and help allowed me to wade through.

I thank the Director, National Chemical Laboratory, and the Head, Division of Biochemical Sciences, for permitting me to carry out
my PhD work in the Division of Biochemical Sciences, NCL and to submit this work in the form of the thesis. I am also thankful to the library staff, administrative and technical staff for their help during the course of my study. The financial assistance from the Council of Scientific and Industrial Research, India is also duly acknowledged.

Finally, I thank God for providing me the strength and energy to pursue and complete my doctoral study.

Madhurima S. Wakankar