ACKNOWLEDGEMENT

I am deeply obliged to Dr. Sarita G Bhat, mentor of my PhD life. Without whose constant guidance and ever inspiring encouragement, this work would not have been possible. She has always been patient and tolerant towards me nudging and guiding me through the rough terrains of my PhD life. I sincerely express my heartfelt thankfulness to this visionary.

I sincerely thank senior faculties of Biotechnology department Prof. (Dr.) M. Chandrasekaran, Dr. K.K. Elyas, Dr. Padma Nambisan, Dr. E. Vijayan for their constant help in performing experiments in their laboratories. I am deeply thankful to Dr. Ramamurthy (NICED) and Dr. G.B Nair (ICDDRB), Dr. K.P. Mohana Kumar (IICB, Kolkata) for their kind support and guidance.

I wish to express my warm and sincere thanks to Dr. C.S. Paulose, Head, Department of Biotechnology, Cochin University of Science and Technology for providing the departmental facilities for carrying out my work.

I am extremely thankful to Dr. Kshitish Majumdar of CCMB, Hyderabad for allowing me to complete an indispensable portion of my study in his laboratory. I am deeply indebted to Dr. Rajesh Ramachandran, CCMB, Hyderabad for all the help he could do, without which it would have been difficult for me to formulate this thesis.

I owe a lot to Dr. Sindhu K.M, who has been a constant source of guidance and inspiration throughout the period of my research. She helped me to get through difficult times and gave me determination and ambition when I lacked them.

My warmest thanks to my lab mates Mr. Siju M Varghese, Ms. Manjusha S and Ms. Jeena Augustine for their great co-operation, timely help and suggestions during my work.

I am thankful to my friends Mr. Binoy Joseph, Mr. Madhu K. Mani, Mrs. Lailaja V.P, Mrs Jasmin C, Mrs Bijna B., Mrs Sapna Mansur, Mr. Soorej M. Basheer, Ms. Archana Kishore, Ms. Jissa G. Krishna, Mrs. Beena and Dr. Sreeja Chellappan for all their help and support during my research.

Dr. Pyroja S., Dr. Eswar Shankar, Dr. Renuka T., Dr. Mohanan V.V, Dr. Balarama Kaimal and Dr. Santhosh Thomas deserve special thanks for their support.
I am thankful to Mr. Akash K George, Mr. Gireesh G, Mr. Reas Khan, Ms. Finla Chathu, Ms. Savitha Balakrishnan, Ms. Remya Robinson, Ms. Anu Joseph and Ms. Amee Krishnakumar for their support and encouragements during my PhD.

The wholehearted cooperation and timely help extended by all my friends are remembered with deep sense of gratitude.

I am indebted to my friends Dr. Vici Varghese, Mrs. Uma G., Dr. Adrish Sen, Mrs. Priya S., Dr. Sajeevan T.P., Dr. Maya Paul, Mr. Anil Kumar, Mr. Mrityunjay Pandey, Ms. Merina, Ms. Reena Haobam, Partha da, Sadhak da, Anjan da, Paramita, Dr. Raghun, Soumi, Shyamanna, Emmanuel Thomson, Dr. Gunjan, Dr. Arnab, Dr. Dwaipayan, Mr. Ram Mohan P. R. and Kalyan mama, who were always there to help me in any matter.

I am thankful to the M.Sc students of Biotechnology Department for their support and co-operation.

My special gratitude to the office staff of Department of Biotechnology and CUSAT administrative office; especially Mrs. Santha Kumari, Mrs. Ajitha, Mrs. Ratna Bhai, Mrs. Usha and Mr. Ismail for their cooperation and support.

I express my sincere appreciation to all my teachers especially to Ratnabhai teacher, Saramma ma'am, Rosamma ma'am, Babu sir, Radhakrishnan sir, Kuttyamma teacher and Hatha sir whose encouragement, love and care is there always with me.

I owe my loving thanks to my Achan, Amma, Chettan, Chechi, Rekha, Chittappanachan, Kunju aunty, Chittappan, Vava aunty, Tina, Tani, Tyna, Tishma, and Binoy. Without their help and understanding it would have been impossible for me to finish this work.

I greatly acknowledge Council of Scientific and Industrial Research for financial support which enabled me to complete this work.

Bernard Rajeev S. W.
Dedicated to My Parents