Acknowledgement

When I sit to write this page numerous faces came across in my mind to whom I am indebted from the beginning of this venture and without all those timely help I could not have completed this work. My utmost thanks are due to Dr. Shankar Shashidhar, Director, School of Biosciences who suggested this problem for the study, very generously supervised the project and improved the embryonic manuscript in numerous ways to enhance the didactic value and brought this project to fruition. As a Director he earnestly extended the gracious help academically as well as administratively to ensure smooth progress of this work.

I am also grateful to Dr. P.C. Raveendran (Former Reader in Microbiology, School of Biosciences, M.G. University), Dr. M. Haridas (Head, Department of Life Sciences, Kannur University), Dr. G. M. Kurup (Director, Planning and Administration, Kerala University), Dr. M. S. Latha (Reader in Biochemistry, School of Biosciences, M.G. University) and Dr. Jyothis Mathew (Lecturer in Microbiology, School of Biosciences, M. G. University) for their help and valuable suggestions.

I am very much thankful to Dr. Jayachandran, Lecturer in Biotechnology, School of Biosciences, who helped me with his books and knowledge and cleared my doubts whenever I approached him. His solicited and unsolicited advice was a great help in my work. He generously helped me in interpreting some of my results.

I extend my sincere and heartfelt gratitude to all the nonteaching staff of this department especially the Laboratory technologists, Mr. Bose and Mrs. Regi.

I'm particularly indebted to each of my friends especially Mrs. Suprabha G. Nair, Miss. Gincy P. Thottathil, Mrs. Sanchya Ramachandran, Miss. Elizabeth Samuel and Mrs. Indu C. Nair for having
been so wonderfully kind and thoughtful, helping me patiently and skilfully in innumerable ways. My heartfelt thanks are due to my friends in the PCRL namely Dr. Jyothi. M, Dr. Sanil. R, Dr. Sreekumar. R, Dr. Kesavachandran, Dr. Harikumaran Nair, Dr. Susan Chandy, Dr. Betzy Mathew, Dr. Pankajam and Mrs. Remya. V. K. for their invaluable cooperation and help in the midst of their own work. Words will not suffice to describe splendid help received from all other researchers of the Department.

Due thanks to Dr. S. S. Unni and his family for their blessings and constant encouragement.

Words of gratitude extended to Mrs & Mr. B. Unnikrishnan, Mrs & Mr. B. Sunil Das, my uncles and aunts and my cousins for their prayers and help.

My special thanks are due to M/S. Minitek, Athirampuzha for word processing and photocopying of this work.

Needless to say, this thesis would not have been possible without the untiring and enthusiastic help and invaluable moral support of my husband Er. S. Ramakrishnan, that left indelible expression in my mind. It goes without saying that this entire piece of work not have been materialized, without the matchless love, warm impetus and mental courage received from my mother Mrs. Oormila Raveendran, my sister Dr. R. Sandhya, my brother in law Dr. Kiran and parents in law.

Fondest memories of my father Er.K.Raveendran who cherished dreams of his daughters achieving academic brilliance provided the ultimate motivation at times of despair.

A word of gratitude to my sweet daughter Santhipriya for bearing all the inconvenience in the due course of completion of this work.

R. SINDHU