It is my pleasure to express deep sense of appreciation to Dr. Sudha Mahajan, my supervisor, for her constant encouragement during the progress of this work.

I thank Prof. M. Habeebulla, Dean School of Life Sciences, for the provision of best facilities available for research.

Thanks are due to Prof. Sopory, Prof. Salil Bose and Prof. Rameshwar Singh for their help and encouragement.

I have been fortunate to make use of the expertise of Prof. H.N. Singh, Dr. Doraiswamy, Dr. Periasamy, Prof. Hugo Scheer, Dr. Tomas Gillbro, Dr. Mimuro, Dr. Holzwarth and Dr. Warner.

No words can express my deep gratitude to the following friends whose help has ranged from academic to financial assistance: Ajay Dubey, Alex, Anand, Andreas, A.P., Arvind, B.P. Singh, Chotu, Claudia, Eva, Guenter, Ingrid, Jha, Jitender, Lee, Mahesh, Mohan, Murthy, Praveen, Ravi, Sanjeev, Shyam Babu, Shukla, Sonu, Sridevi, Sudhakar, Sudhir, Steffini and Venkat, Joideep and Siege.

The Council of Scientific and Industrial Research should be duly thanked for providing me with a fellowship.

Lastly, I express my gratitude to my brothers, parents and grand parents whose care and affection have sustained me throughout these years.

However, I will be responsible for any mistake that might have crept into this thesis.

( P.S. Maruthi Sai )