Acknowledgement

At first I express my heartfelt indebtedness and gratefulness to my supervisor, Prof. Joydeb Pal. I would like to thank him for giving me this opportunity to work under his valuable guidance. He has always given me the freedom to work and encouraged me all the time to pursue my research assignment. I am also indebted to my co-supervisor Dr. Dipanwita Saha, for her constant inspiration and novel guidance during the course of my work.

I am thankful to all the faculty members of the Department of Zoology, North Bengal University including Prof. B.C. Pal, Prof. A. Chakravarty, Prof. D.C. Deb, Prof. A. Mukherjee, Prof. T.K. Chaudhuri, Prof. S. Barat, Dr. M. Bahadur, Dr. S. Bhattacharya and Mr. D. Saha for their constant encouragement. Dr. M. Bahadur has always given me enough time to answer my queries. I would like to thank all the non teaching staffs of the Department of Zoology, North Bengal University for all the help rendered to me during the course of my research work.

I am indebted to Dr. A. Sen, Department of Botany, North Bengal University for his help and guidance. He has always permitted me to avail the facilities in his laboratory.

I would like to take this opportunity to thank Dr. H. Yasmin, Mr. T. Mazumdar and Dr. S. Bagchi for their constant help and support. I always found them beside me whenever I needed. I am also thankful to Dr. S. Routh, Dr. M. Sarkar, Dr. D. Mandal, Mrs. M. Rudra, Mr. S. Das, Mr. B. Rai and Mr. D. Bhutia for their valuable co-operation.

I owe special thanks to Mrs.G. Dhar Purkayastha and Mrs. A. Ghosh, Department of Biotechnology, North Bengal University for their technical support to pursue my work.

I have much pleasure in expressing my heartfelt gratitude and respect to my parents for their constant inspiration and support. This thesis also owes much to the love and encouragement I received from my other family members.

Lastly, I thank Department of Biotechnology, Ministry of Science and Technology, Government of India for providing me the financial assistance to complete this work.

Arindam Das.

(Arindam Das)