ACKNOWLEDGEMENT

This piece of work has been accomplished with the Almighty God, His blessings and His power that work within me and also with the people behind my life for inspiring, guiding and accompanying me through thick and thin. It is a pleasant moment to express my heartfelt gratitude to all. The best and worst moments of my doctoral journey have been shared with many people.

I take immense pleasure to express my sincere and deep sense of gratitude to my supervising guide and mentor, Dr. C. S. Paulose, Director, Centre for Neuroscience, Professor, Dept. of Biotechnology, Cochin University of Science and Technology for his sustained enthusiasm, creative suggestions, motivation and exemplary guidance throughout the course of my doctoral research. I am deeply grateful to him for providing me necessary facilities and excellent supervision to complete this work. His passion for work and zeal for scientific excellence has exceptionally inspired and enriched my growth as a student and a researcher as well. I am short of words to express my sincere appreciation for his patience and tolerance to me throughout this period. His understanding, encouraging and personal guidance have provided a good basis for the present thesis. I am solemnly indebted to him more than he knows or words can ever convey.

I offer my profound gratitude to Dr. E. Vijayan, UGC Visiting Scientist, Centre for Neuroscience, Dept. of Biotechnology, Cochin University of Science and Technology, Dr. Ommen V Ommen, Department of Zoology, Kerala University and for his help and encouragement during the period of my research. Also, I wish to extend my gratitude to Dr. Babu Philip, Dept. of Marine Biology, Microbiology and Biochemistry, CUSAT for his help, encouragement and advice.
I would like to acknowledge Dr. Sarita G. Bhat, Dr. Padma Nambisan, Prof. M. Chandrasekaran, faculties of the Biotechnology Department, Cochin University of Science and Technology and Dr. Elyas K. K, former lecturer of the Department for their advice and support throughout my work.

I sincerely acknowledge my senior colleagues Dr. Jackson James, Dr. Ani V. Das, Dr. Eswar Shankar, Dr. Mohanan V. V, Dr. Renuka T. R, Dr. Balarama Kaimal, Dr. Santhosh Thomas K, Dr. Akash K. George, Dr. Gireesh G, Dr. Finla Chathu Dr. Reas Khan S, Dr. Savitha Balakrishnan, Dr. Binoy Joseph, Dr. Nair Ameek Krishnakumar, Dr. Remya Robinson and Dr. Anu Joseph for their valuable suggestions and encouragement which have definitely helped to improve my research work.

It is with great pleasure I express my sincere gratitude to batchmates, Mrs. Chinthu Romeo, Mr. Korah P Kuruvilla, Mr. Smijin Soman, Mr. Jeyanarayanan S and my senior Dr. Anju T. R, who motivated and stood by me in all my efforts during the course of my work. I also extend my thanks to Mrs. Shilpa Joy, Ms. Roshni Baby Thomas, Mr. Naijil George and Mr. Ajayan for their help, support and friendship. I record my gratitude for their help, cooperation and patience for checking and editing my work. My friends and colleagues, Dr. Pretty Mary Abraham, Dr. Nandhu M.S, Dr. Peeyush Kumar, Dr. Jobin Mathew, Dr. Sherin Binoy, Dr. Jes Paul, had always been there with a helping hand throughout the period of my work. Thank you all for making my days at CNS - a wonderful experience with your affection and friendship that each one has showered on me.

I also thank Ms. Beena PS, Mr. P Karthekeyan, Mr. Cikesh PC, Mr. Sajan, Mr. Sijo Joseph, Mr. Mr. Siju M Varghese, Ms. Jina Augustine, Mr. Raghul Subin S, Ms. Helvin Vincent, Ms. Smita S, Mr. Manzur Ali PP, Ms. Sapna K, Mr. Abraham Mathew, Mr. Ramesh Kumar S, Mr. Prasanth S, Ms Anita Pinheiro, Ms Jasmine
Koshy, Ms. Jikku Jose, Ms. Sudha Hariharan, Mrs. Sowmya, Mrs. Arrinnia Anto and M.Sc. students of this Department for their friendship, help and co-operation.

I thank all the present and past non-teaching office staff of our department for their timely help and co-operation. My special thanks to the authorities and staff of Cochin University of Science & Technology for their help and co-operation. I acknowledge my thanks to staff of Athulya Ladies Hostel of the University for their help and cooperation rendered during my stay.

I am also thankful to the authorities of Small Animal Breeding Centre, KAU, Mannuthy and Amrita Institute of Medical Sciences, Cochin for readily providing animals for my work and deeply remember with gratitude all the animals who laid down their lives for the successful completion of my research.

This research has been supported and funded by various organizations DST, KSCSTE, DBT, ICMR and CUSAT. I would like to extend my sincere thanks to Indian Council of Medical Research for supporting this work with fellowship in the initial period of my work and to Cochin University of Science and Technology for providing me with Junior Research Fellowship till completion of my work.

I would not have completed my thesis without the selfless help and encouragement from my dear friends. To my friends, who are the sunshine of my life and believed in my capabilities more than I did Ms. Ashitha, Ms. Rithu Jomy, Dhanya Predeep, Ms. Aruljothy Subramaniam, Mr. Brailey Chandrabalan, Mr. Sarath, Mr. Retheesh Kumar, Mr. Roji John– thank you all for being there when I needed help. I will never forget the times you have spent to make me lively and cheerful even in the cloudiest of my days. My special thanks to Mrs. Premsy, my roommate, for her
readiness to help me at anytime. My unfailing thanks to Mr. Georgekutty Michael, who have always been there with a helping hand.

My special thanks to Dr.N.D.Inasu, former Pro.Vice Chancellor, Cochin University of Science and Technology and Laughy George, Cochin University of Science and Technology. I truly acknowledge them for all their help and guidance.

I thank all the teachers of my school days, graduation and post-graduation for inspiring and encouraging me. I acknowledge James sir and deeply indebted to him for his unconditional support and guidance.

My joy knew no bounds in expressing the heartfelt thanks to my family. I owe my thanks to my husband Joemon George for giving me untiring support and encouragement for the materialization of Doctoral study and for his love and patience. I can barely find words to express all the wisdom, love and support given to me by my parents Mr. M.J. Peter and Mrs. Texy for their unconditional love, endurance and encouragement. I am deeply indebted to my brother, Mr. Arun Peter Malat, for motivating me in accomplishing my goal. Also, I acknowledge my father in law, Mr. George Cherupullil and mother in law, Mrs. Martha George, Brother in law, Dr. Jijumon George, for their constant encouragement and support. I owe my thanks to my beloved aunts, uncles and cousins for their support and prayers throughout my Doctoral study. They have been selfless in giving me the best of every thing and I express my deep gratitude for their love without which this work would not have been completed. I remember thankfully the love and blessings showered upon me by my grandparents and Jaison uncle, remember them thankfully for their love. I take this moment to express my never ending love and respect towards them for their blessings. My tribute…… to number of animals who have paid their lives. I pay my tribute to their sacrifice and pray that it is not in vain.
Finally, I would like to thank everybody who stood by me for the realization of this thesis.

Anitha Malat