ACKNOWLEDGEMENT

This special journey in my life has taught me lots. Have made me laugh, cry and fight at times. This journey has given me lots of experience which I couldn’t forget in my lifetime. I would like to take this opportunity to thank each and every individual from my heart who stood with me whenever required. The help, discussion, encouragement, discussion and critiques by my dear and near have made me to achieve this milestone.

"Those who educate children well are more to be honored than they who produce them, for these only gave them life, those the art of living well - Aristotle". These words exactly match my Academic father Prof. (Dr). M. Chandrasekaran. First and foremost I take immense pleasure to express my sincere and deep sense of gratitude to my supervising guide and mentor, Prof. (Dr). M. Chandrasekaran, who brought a turning point in my life. He introduced me this interesting topic of research Archaea, which I am interested to take up as my specialization in rest of my research career. His blessings, valuable suggestions, motivation and perfect auspices throughout the course of my doctoral research made me to paint my personal life very beautiful. Personally I would like to thank him for his philosophical advices which I required then and there. His understanding, encouragement 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 am deeply grateful to him for providing me necessary facilities and excellent supervision to complete this work. I am short of words to express my sincere appreciation for his patience and tolerance throughout this period.

"When you study great teachers... you will learn much more from their caring and hard work than from their style- William Glasser”.

I express my deep sense of gratitude to Dr. Sarita G Bhat, Associate Professor and Head, Department of Biotechnology, CUSAT, for her advice and support throughout my work. I am very thankful for the discussions, valuable advice and suggestions as my research Co-guide. Personally
would like to render a special thanks to mam for hearing all my problems and troubles and giving suggestions and motivating me to stand still and work. She has always paved me way to reach my goal without any hurdles. Thank you for being my great teacher mam.

I express my heartfelt gratitude to Dr. Padma Nambisan, for her valuable suggestions and support as a doctoral committee member throughout my research work.

I would like to acknowledge Prof. (Dr.) C.S. Paulose, Professor, Department of Biotechnology, CUSAT for the valuable suggestions and support throughout my work. I offer my profound gratitude to Dr. E. Vijayan, ICMR Emeritus Professor, for his help and encouragement during the period of my research.

I thank Dr. Elyas, Professor, Department of Biotechnology, University of Calicut for his suggestions and support throughout my research work.

My sincere thanks to Dr. Ganesan, who gave me a very good opportunity to work under him in a college and from where I got Prof. Chandrasekarans contact. My heartfelt thanks also goes to Dr. Murugan, through him I got introduced well to Prof. Chandrasekaran who gave me this opportunity and finally now getting down from this PhD bus.

I am thankful to all my friends dear and near for their constant support and help rendered throughout my research period. I should mention a special note of thanks to Arul sir for taking care of me as his son and being near me in all my hardest times.

I personally like to thank Dr. Anandan, Scientist and Mr. Navaneethan, CIFT, Cochin for their help performing aminoacid analysis. I also like to thank Dr. Anas, Scientist, NIO Cochin for helping me with FAME analysis. I would also thank Dr. P. Mahalakshmi (my sister), Department of Pharmacology, JSS University College, Ootacamand and Mr. R. Thangam.
Research scholar, Department of Virology, Kings Research institute, Chennai for helping me with experiments.

My warm thanks to my school sir Mr.Karthikeyan (KK) for being an inspiration for me to choose Biotechnology as my career. I abide the words of Alexander the Great "I am indebted to my father for living, but to my teacher for living well". Thank you sir I am really living well.

A heartfelt thanks to my seniors Dr.Score, Dr.Jissa, Dr.Beena and Dr.Jasnine who introduced MTL and taught me basics to go on with my experiments and for their valuable discussions and suggestions. The ignition has been a great inspiration in this research journey.

I express my deep sense of gratitude to my labmates Mrs.Roselin, Mr.Sajan, Mr.Doles, Mrs.Manjula, Mr.Ckesh, Mrs.Bindhiya and Ms.Tina who has always been with me in all my moments and for their fruitful discussion and support. I am really lucky that I got such understanding people around me who has never let me down in any situations.

My heartfelt thanks to my colleagues of MGL, Mr.Siju, Mrs.Vijaya, Dr.Rahul, Dr.Jeena, Mrs.Smitha, Mrs.Helvin, Mrs.Linda, Mrs.Harisree, Ms.Mridula, Mr.Noble and Ms.Lekshmi for their support.

I thankfully remember the members of Immunotechnology lab, Mr.Ramesh, Mr. Manzur, Mrs. Sapna and Mrs. Rekha for their support and affection.

I like to thank Mrs. Jasnine, Ms. Jikku, Ms. Sudha, Ms. Soumya, Ms.Kiran and Ms. Anala of PBT and all M.Sc. students of this Department for their friendship, help and cooperation.

I wish to thank all my friends of Neuroscience Laboratory especially Dr. Smijin Soman, Dr. Korah P. Kunwila, Mr. Jayanarayan, Dr. Peeyush Kumar, Dr. Jes Paul, Dr. Jobin Mathew,
Ms. Shilpa, Ms. Roshini, Dr. Anita, Dr. Anju T.R., Mr. Nijil and Mr. Ajayan, for their friendship, help and support.

I acknowledge Ministry of Earth Science, Govt. of India, CMLRE, Cochin and DST for providing me financial support for my research. I thank all the present and past office staff of our department for their timely help and cooperation. My special thanks to the authorities and staff of Cochin University of Science & Technology for their help and cooperation.

I also like to thank Dr. Shibu and his team, STIC, CUSAT for helping me whenever required to do with analysis. Also I would like to thank Mr. Sudesh, IIT, Mumbai for helping me with protein sequencing. I express my thanks to Centre for DNA Fingerprinting and Diagnostics, Hyderabad (CDFD) for their timely help rendered towards my research.

I take this opportunity to thank my uncles who carried in their shoulders all the way to my school to give me a basic education which has now brought me to this height in my life. I will surely be thankful to them throughout my life and be a support each and every moment.

I am short of words to thank my beloved parents, sister and all other family members. They have been selfless in giving me the best of everything and I express my deep gratitude for their love and support without which my dream would not have become real. I am deeply indebted to them for motivating me in effectively working and accomplishing my goal. I acknowledge all my dear relatives for their assurance and good-will in every way.

Last, but not the least, I am grateful to the Almighty God for the grace and benevolence bestowed on me throughout my life and to complete this doctoral research work.

P.Karthikeyan
Dedicated to

my beloved parents