Acknowledgement

Completion of this doctoral study is a milestone in my academic career. I am grateful to a number of people who have guided and supported me throughout the research process and provided assistance for my venture. I would therefore like to express my indebtedness to every individual who has been a crucial part of this endeavor.

It has been a great privilege to spend several years in the BRD School of Biosciences Department and its members will always remain dear to me. I owe my gratitude to everyone who has made this study possible and because of whom my graduate experience has been one that I will cherish forever.

Life sometime surprises us by giving more than expected. This research began as a dream for me, and today it stands as proof that dreams come true. At this moment of accomplishment I am highly indebted to my research supervisor, Prof. Vasudev R. Thakkar for accepting me as his student. I have been very fortunate to have him as an advisor who believed in me and my ability; and he encouraged me to be the best that I could be. He taught me how to question thoughts and express ideas. I do sincerely acknowledge the freedom rendered to me by him for independent thinking, planning and executing the new ideas in research. His ever encouraging promethean words, timely guidance, moral boosts have always been my backbone, my pillar of strengths under all odds. I bow to the Sir.

I take this opportunity with immense pleasure to express my deep sense of gratitude to my teacher and research co-guide Prof. R. B. Subramanian, BRD School of Biosciences, Sardar Patel University. I thank him for his excellent guidance, constant encouragement, sincere advice, and unstinted support during all the tough times of my Ph. D. life.

I wish to express my thanks to Prof. A.V.R.L.N. Acharya, Head, BRD School of Biosciences and Prof. (Mrs.) Kiran Kalia, Prof. Harish Padh and Prof. K. S. Rao former Head, BRD School of Biosciences, Sardar Patel University for providing the support and encouragement for the research work.
I gratefully acknowledge the funding sources that made my Ph.D. work possible. This work was funded by UGC, New Delhi and also providing me fellowship for three years.

I am very much thankful to Oil seed research station, Junagadh Agriculture University, Gujarat, India for providing different peanut varieties during my entire studies.

A special thanks to owner of Narayan farm (Mafatbhai), valasan village, Vallabh Vidyanagar for providing me a space from their field to conduct field studies and for their support and help during entire field study.

I extend my gratitude to Eurofins Genomics India Pvt Ltd, Bangalore, India and research student (Sanada and Binal) of Prof. Datta’s lab for 16s rRNA gene sequencing. I am also thankful to BioAxis DNA research center and Sendor Proteomics research centre, Hyderabad, India for FAME analysis and Protein identification respectively.

I sincerely thank to Prof. K. C. Patel, Prof. T V Raman Rao and Prof. Datta Madamvar, B.R.D school of biosciences; for their valuable supports, suggestions and allowing me to utilize their lab facility without boundaries and help in significant evaluation of the findings with critical comments to improve upon.

I would thank Dr. M. Nataraj for his support, providing joyous environment, worthwhile discussion and well wishes. I extend my thanks to all the faculty members of BRD School of Biosciences for their well wishes and kind support.

I express my generous thanks to Mr. Nitin Solanki and Dr. Hitesh Patel, for helping me in learning and trouble shooting in the usage of central facility instruments. I also thank to office staff for their valuable support.

I take this opportunity to thank my colleagues Dr. Pinaki Patel, Disha Patel, Mafatlal Kher, Parth Thakor, Tekalign Kejala, Dilip Raval and Dhaval Patel who always encouraged me and made my tenure light and full of joy.
I also take this opportunity to thank Sanket, Vimalbhai, Ketan, Deval didi, Binal, Avani, Sejal, Dhara, Dhara, Devang and Henil, who always encouraged me and made my tenure a memorable one.

Most important is the fact that none of this would have been possible without the love completion and patience of my Mom and Dad. I dedicate this Ph.D. thesis to my family. The member of this family has been a constant source of love, concern, support and strength through all these years. I would like to express my heart-felt gratitude to my sisters Aeral and Tulsi, my aunty Parul, her daughter Shreena and son Deep and Jay.

Last but not the least, Grace of Almighty, Divinity and Guruji throughout the tenure taught me to live with passion and serene. I thank them for giving me strength to live up to expectations of my parents, teachers, family and friends.

_You blessed me with your service......._

_You are the doer; I am merely your instrument._

-Ravikumar Patel