Acknowledgement

The path of success is not straight, but riddled with temptations, impediments and pitfalls all along. All these difficulties make us realize the importance of success humbly.

I feel short of words to express my deep sense of gratitude towards the Almighty God with whose grace present study has been completed.

It has extreme pleasure in expressing my sincere gratitude to my worthy guide, Prof. R. S. Chauhan, Head, Department of Biotechnology & Bioinformatics, Jaypee University of Information Technology, Waknaghat, Solan, for introducing me to the enthusiastic field of ‘Plant Biotechnology’, his kind supervision, guidance and encouragement throughout the course of this study. I also appreciate his untiring efforts during the entire tenure of my research work and patience during writing of this thesis. I earnestly believe that without his right suggestions, this work would not have been completed. He is more than a supervisor for me. Thanks Sir, for believing in me and standing by me over the years.

I earnestly wish to express my deep venerable gratitude to Brig (Retd.) Balbir Singh, Registrar, Jaypee University of Information Technology for his constant support, not only for administrative support but also for constant inspiration.

Special thanks are due to Vice Chancellor, Dr. Ravi Parkash for extending his facilities to carry out research and critically reviewing my synopsis.

I am delighted to express my thanks to COO, Dr. Y. Medury, for providing all the necessary facilities, and creating research environment to accomplish this scientific venture of my life.

I wish to convey my sincere thanks to all the faculty members of Department of Biotechnology and Bioinformatics, particularly Dr. Harvinder Singh and Dr. Hemant Sood for their help and guidance at the various stages of this study.

I am extremely thankful to non-teaching staff particularly Somlata mam and Mamta mam of the department for their selfless assistance. Their boundless love shall be remembered forever.

I am grateful to my father Sh. D.P. Aghnihotri who has been a moving spirit behind all my achievements. I bow my head to my mother Smt. Sarita Aghnihotri for her generous support invaluable blessings, selfless but untold sacrifices for my better and bright future. Without the encouragement and moral support of my in-laws, I could never have been what I am today. I am also thankful to my brother Vikas for his support and encouragement.

It is high time to acknowledge all my fellow colleagues especially Nidhi, Saurabh, Chintu, Payal di, Krishna, Anu, Chinku, Jatin, Tamanna mam, Anshu, Mani, Varun, Jeet, Sneha, Asha, Arun, Mamta, Navneet and Priya for their problem solving attitude and healthy discussions during the course of my research work.

I highly appreciate for unsolicited cooperation and cheery assistance of my husband Dr. Jyoti Parkash. His unconditional support, strength and love helped me to make my dream come true.

I am thankful to the Department of Biotechnology, Ministry of Science and Technology, Govt. of India, New Delhi for awarding me the research fellowship.

(Arti Sharma)