ACKNOWLEDGEMENT

I would like to express my sincere gratitude and deepest appreciation to my supervisor Dr. Anil. K. Mantha for his consistent well-articulated scientific guidance and support during the course of my research work and projection thereof in the shape of thesis for Ph.D. But for his patience, motivation, and in depth knowledge of the subject coupled with teaching methodology, immense interest and sincere urge to impart threadbare guidance, it would have been difficult for me to steer through conveniently. My sincere thanks also go to my co-supervisor Dr. Monisha Dhiman for her beneficial suggestions, corrections and constructive discussions throughout the research that helped me immensely in improving my work and come up to the mark.

I am forever indebted to Prof. (Dr.) P. Ramarao, for always being so kind, supportive and motivating throughout the period of my research work. I am also very grateful to Dr. Sandeep Singh, in-charge Animal cell culture laboratory for his support during the lab work. I also extend my heart-felt thanks to Prof. (Dr.) R.G. Saini, Dr. Sanjeev Thakur, Dr. Felix Bast, Dr. Pankaj Bhardwaj, Dr. Rachana Gautam and Dr. Vikas Jaitak for their valuable advice and constant encouragement during throughout this process. My deep appreciation also goes to Mr. Ashish Pandey and Dr. Sumeer Razdan for their assistance and immense help in imaging of the samples by confocal microscopy. I wish also to acknowledge the contribution and support of the scientific community towards the development of thesis; if some relevant citation is missed, I sincerely apologize for the inadvertent error.

My acknowledgement will be grossly incomplete without mention of my thanks to the Vice Chancellor, university staff and in specific the founder Vice Chancellor of the Central University of Punjab, revered Prof. Dr. Jai Rup Singh who I believe worked as a fountain head to shape the university from the initial stage to current level.
It would also not be out of point to mention that without the financial support of the Indian Council for Medical Research (ICMR), New Delhi in the shape of fellowship stipend granted for my Ph.D. studies, things would have posed financial constraints. So I am indebted to ICMR/Govt. of India as well.

My fellow lab mates too deserve my gratitude for the help, support and stimulating discussions. It is a pleasure to thank my friends at CUPB, in particular, Bibek, Iqbal, Praveen, Shishir, Gaurav, Navrattan, Rabindra, Nandini, Neha, Nidhi, Smriti, Kavita, Akanksha, Fayaz, Naga Chandra, Igona, Prabhat, Saurabh, Sharan, Kunj, Vikas and Ravi for the wonderful times we shared.

I would like to acknowledge my beloved parents Sh. Hari Singh and Smt. Veena, and my lovely sister Ms. Malvika Thakur for encouraging and supporting me morally and spiritually throughout writing this thesis and my life in general. It is a pleasure to convey thanks to my family members for showing moral support and love to me.

Shweta Thakur
Bathinda, March 2018