Acknowledgement

It is by God's willingness that I hereby place on record my deep sense of gratitude and reverence to all those who have become a part of me and have helped and encouraged me to complete this work.

I am deeply indebted to my philosopher and guide, Prof. Rajiv Bhat for his constant support, encouragement, supervision and freedom to realize my scientific pursuit. In spite of all my continuous blunders that I committed, he went on believing in my abilities. His faith on me remained unstinted even when I stopped believing in myself and was always there when I needed him most. I owe him lots of gratitude for having me shown the path of being a better human being and perhaps, a better student. This piece of work would have been a distant dream for me without him.

I express heartfelt gratitude to wonderful faculties at the School of Biotechnology. Prof Aprana Dixit, Prof. K. B. Roy, Prof. Santosh Kar, Prof. Rakesh Bhatnagar, Prof. Uttam Pati, Dr. Devapriya Choudhary, Dr. Maitra, Dr. Ranjana Arya, Dr. Swati Tiwari and Dr. M. S. Rajala for their constant support. Special thanks to Prof. Aprana Dixit who always worked hard to generate all necessary facilities and conducive environment. I would also like to thank Dr. Nand Kishore, IIT Powai, Bombay and Dr. Amulya Panda, NII, New Delhi for their support, motivation and guidance.

No words suffice to thank my incredible lab members Rajesh, Prasanna, Samar, Neeraj, Tashfeen, Swapnil, Manish, Unnati, Mitra, Rajni, Ajit, Dhiraj, Sandeep, Suman, Dipen, Aruna, Preeti, Haroon, Shanti, Akash, Sinjan, Om Prakash, Himanshu, Praveen kumar, Santosh, Neha, Baia, Rakhi, Simran, Bishu dada and Praveen for their affection, care and support.

I will remember the company of all the past and present students of SBT and companions including Gaurav Pandey, Palash, Yogi, Khusboo, Sanjay, Suman, Poonam, Anuradha, Chaitali, Neelam, Pushpendra, Leena, Bhairav, Rajiv, Preeti, Manish Soni, Harpreet, Neda, Sujeet, Ajay, Sudarshan, Ubaid, Anand, Manish Mishra, Kalam, Sushil, Manoj, Gautam, Saurabh, Thoh, Rajveer,

I wish to express my thanks to SBT staff- Manoj ji, Tyagi ji, Tiwari ji, Nepal Singh ji, Sindhu madam, Vedpal ji, Dilbag Singh ji, Aiyer Sahab, Geeta ji, Yadav ji, Sajan ji, Sachadeva madam, and Mrs. Geeta Joshi for their full cooperation in official hassles. Tiwari ji needs a special mention for his supporting and helping nature. Thanks to Nepal Singh ji for rightly managing CIF which is life line of all CBTians.

Day to day help of laboratory staff- Ramsukh ji, Umesh ji, Bishu dada, Anil ji, Amresh ji and Ghansham ji, Mukesh ji, Rajesh ji, Praveen ji, Lakshmi, Manoj ji, Ved ji, Suraj Pal ji and Manju ji is duly acknowledged. Security guards Sanjay and Jitendra would always remain in my memories for their friendliness.

Financial support provided by CSIR (Council for Scientific and Industrial Research) and DBT is sincerely acknowledged.

The time spent with Prasanna, Samar, Neeraj, Sanjay, Gaurav Pandey (a saint), Baia, Dhiraj, Arun, Atul, Shailesh, Dilip, Amir, Gautam, Shanti, Mimin, Gaurav Awasthi, Manish Mishra, Rana Pratap, Bapi, Yogi, Khushoo, Hlmanshu, and Alok will always remain in my fond memories.

My family is pillar of my strength. They gave breath to my life and skilled my tender steps to follow the path of righteousness. I would like to express my heartfelt gratitude to my family.

Saurabh Singh