Acknowledgements

This thesis would not have been possible without unstinted support and unflagging love extended by my parents. Their constant support and sacrifice have provided me necessary inspiration to move ahead even in tough times.

I wish to express special thanks and gratitude to my supervisor, Dr. Deepak Sharma for his constant encouragement, scientific and academic guidance, throughout my PhD work. I would like to gratefully acknowledge the scientific guidance and constructive comments extended by Prof. Rameshwar Singh and Prof. B.N Mallick. I wish to express my warm and sincere thanks to Prof. P.K. Yadava (DEAN) and Prof. RNK Bamzei (Former DEAN) for providing optimum environment and research support during my PhD work. I also like to thank Prof. Rajendra Prasad (Rector, JNU) for his help in getting financial assistance for attending National and International conferences. The work experience garnered under the watchful and proficient faculties at the School of Life Sciences was very helpful.

Words fell short while expressing gratitude to Mrs. Pallavi Sethi (my loving wife), without her help this work would have been impossible. She mirrored back my ideas so I heard them aloud. Special thanks to Dr. Deepak Kumar for his untiring effort to clarify my doubts related to MATLAB analysis. His extensive discussions and interesting explorations have contributed immensely in my thesis. This would be an appropriate opportunity to express gratitude to my elder brothers Naveen Jyoti, Jeewan Jyoti and family friends Vivek, Abhishek for providing me much needed motivation during difficult times. My deepest gratitude goes to my father and mother-in-laws for their persistent love, and understanding.

I am grateful to Dr. Radhakrishnan Nagarajan, Department of Biostatistics, University of Arkansas Medical Sciences, for discussing my PhD work and providing valuable suggestions throughout. I am thankful to Prof. Joan Cranmer, UAMS and Dr. Terris Demestra (World Health organization) for providing me opportunity and financial help through World Health Organization to participate in 23\textsuperscript{rd} International Neurotoxicology Conference, UAMS, Arkansas, USA. Support extended by Department of Science and Technology (DST) to attend 27\textsuperscript{th} International epilepsy congress, Singapore is duly acknowledged.

The support extended by my seniors Dr. Meenakshi Upreti, Dr. Dinesh Pal, Dr. Prem Kumar Gupta and Junior Deepender kumar (AIIMS) has helped me immensely in initiating my PhD work. I would also like to express my gratefulness to all my friends Prakash, Samanwoy, Gyan, Neetu, Arpita, Swati, Preeti Gupta, Snehil Kashyap, Arvind for giving me encouragement and friendship. The cooperation provided by labmates Pallavi, Kiranbala, Somnath, Monika, Asia ma’am and batch mates Himanshu, Himjyot, Manoj,
Ranapratap, Siddharta, Satpal, Ruchi made my doctoral journey easier. Their words of encouragement and suggestions were satisfying.

I am grateful to Meenu and Saini Maam for their support in official work at School of Life Sciences. I wish to acknowledge the help rendered by the CIF staff, Dr. S.K Sharma, S.K. Mishra, Khan Sir, Alexandra Sir and animal House staff Mr. Pandey and Mr. Raju.

I am also thankful to our laboratory assistants Satyendra, Virendra Ji, Satyaram for getting things arranged during experimentation. I want to extend my sincere thanks to the research staff of SAIF, Central Electron microscopic Facility, All India Institute of Medical Sciences for helping me in performing electron microscopic studies.

Apart from all this, I have deep respect for my experimental animals which provided me enough data for this thesis. Their contributions are greatly acknowledged.

The financial assistance by the Council for Scientific and Industrial Research (CSIR) as Junior Research Fellowship (JRF) and Senior Research Fellowship (SRF) is gratefully acknowledged.

Last but not least, thanks to God for inculcating faith, confidence and motivations throughout these days. You have introduced me with infinite possibilities of life and fulfilled my desires.

I must acknowledge the innumerable influences, scientific and non-scientific, which helped me in motivation, in though process and especially in analysis of observations. All errors and omissions are mine and mine alone.

Amar Jyoti