Acknowledgements

First and foremost, I am thankful to Almighty for blessing me with courage and patience to complete this work and compile it as thesis. I am extremely thankful to my mentor, Dr. Debapratim Kar Chowdhuri, Senior Assistant Director, Embryotoxicology Section, Industrial Toxicology Research Centre (ITRC), Lucknow, for his constant support, cogent guidance and positive outlook in science and life. He has provided me encouragement and motivation throughout the course of this work. His time, patience and scientific discussions were an asset to my research and his contribution goes beyond any measurable value. Without him I wouldn’t have come this far.

I would like to thank my teacher and supervisor, Prof. Absar Mustafa Khan, Chairman, Department of Zoology, Aligarh Muslim University (AMU), Aligarh for his constant inspiration, scientific interest, great insight and guidance throughout my programme. I am also highly obliged for his all possible help regarding my registration and topic change.

All Drosophilia – except those who escaped during experiments – involved in the study.

I extend many thanks to Dr. DK Saxena, Head, Embryotoxicology section, ITRC, Lucknow, for his kind moral support, valuable help and suggestions throughout my tenure in this programme. I am also extremely grateful to Dr. RC Murthy, Head, Metal analysis Section, ITRC, Lucknow, for his ready availability for critical discussion and friendly approach during Ms. Preparation and different experimental work.

Also, great thanks are extended to present and former Directors, Dr. A Kumar, Dr. PK Seth, Prof. YK Gupta and Dr. CM Gupta, of the Centre for providing all necessary facilities to carry out my dissertation work at ITRC, Lucknow.

I express my profound sense of gratitude and indebtedness to the Department of Zoology, AMU, Aligarh, and its former chairmen Prof. JA Khan, Prof. AK Jafri and Prof. M Hayat for their support in my higher studies.

I would like to thank Prof. I Ahmed, Dr. A Hasnain, Prof. MA Afzal, Dr. A Azfer, Dr. GCH Saadah, and Dr. MK Saifullah, Dr. R Ahmed, Dr. Z Ahmed and Dr. SM Haris, Department of Zoology, AMU, Aligarh, for their valuable suggestions, consolations and timely help. I ought to convey my sincere regards and thanks to all other teachers of the Department for their necessary cooperation and support.

I would like to express my sincere gratitude to Dr. A Dhawn, Developmental Toxicology Section, ITRC, Lucknow, for providing the Comet assay facility, Dr. VK Bajpai and Dr. K Mitra, Scientist, Central Drug Research Institute (CDRI), Lucknow for Electron microscopy, Dr. MDixit, Scientist, CDRI, Lucknow for Flow Cytometry, respectively. I thank Ms. A Arya, M Srivastava and Mr. AL Vishwakarma of CDRI, Lucknow, for technical assistance during Electron microscopy and flow cytometry, respectively.

I am grateful to Prof. SC Lakhotia, Banaras Hindu University, Varanasi, India, for Drosophila Bg* stock, Prof. MB Evgenev, EIMB, Moscow, Russia, for Drosophila Hsp70 monoclonal antibody (7F6), Prof. BA Hay, Cal. Tech., California, USA, for Or1ce antibody, Bloomington Drosophila Stock Center, Bloomington, IN., USA, for OregonR, mei41 and dnanase2 strains, Prof. CM Sierra, University of Oviedo, Spain, for mus201 and mus308 strains, Prof. A Pastink, Leiden University,
Netherlands, for rad54 and ligaseIV strains and Prof. E Kubli, University of Zurich-Irchel, Zurich for sex peptide antibody, respectively. I thank Prof. MF Wolfner, Cornell University, USA, for her suggestions from time to time.

I take this opportunity to convey thank to Mr. Ramnarayan, Dr. Kanaujia and Mrs. Archana for their technical assistance. I express my sincere thank to Mr. N Mathur for his valuable help in the statistical analysis of the experimental data.

I extend my deep sense of thanks to my colleague and friend Subash for extending his continuous support during experimental work and compilation of thesis.

I am also thankful to my seniors and laboratory colleagues Dr. N pant, Dr. A Nazir, Dr. I Mukhopadhyay, Devyani Mahendra, Anurag, and Manish who helped me in many ways to complete my thesis.

I sincerely thank my dearest friend Maqsood, for his continuous help in the compilation of my thesis.

I would like to thank my friends Pradeep, Farman, Badar, Roopa, Shaily, Sabnam, Amit, Fauzia, Asma, Sarvat, Tanveer, Aqeel, Mahima, Naveen, Alok, and Muheet for their support and friendship throughout my tenure.

My parents for my genes and childhood environment that have made me the person I am. For understanding when I was stressed and for constantly reminding me to have a cheerful mind. At this time, I profoundly miss my Ma whose journey to the heavenly abode could not see this day of my efforts. My elder brother and teacher, Mr. IR Siddique has always been supportive throughout my academic career. His everlasting love and affection, scrupulous attitude, sacrifices and long awaited night hours to share the burden of mine put an extra energy to devote myself in the work. Thank's Bhai.

I would like to extend great thanks to my chotu Bhai, Badi Apa, Choti Apa, Farhana, brother-in-laws, sister-in-laws, my nieces and nephews for their constant support, encouragement, faith, confidence and patience which helped me to achieve the goal. Without their whole hearted love and support, I would not have finished this programme.

The work has been financially supported by the Council of Scientific and Industrial Research, New Delhi, (Grant No. 31/29/147/2003 EMRI).

Lastly, I thank all those whose names are not mentioned here, but have helped me directly or indirectly in shaping up this thesis.

Hifzur Rahman Siddique

(Hifzur Rahman Siddique)