Acknowledgements

Behind every success of each person there are many known and unknown helping hands and it is always a matter of pleasure to remember and thank them at the end.

With much hesitation when I started my research work at the fag end of my career, it seemed to me simply impossible to finish this herculean task within the stipulated period. But it was made possible at last and the cloud of hesitation swayed away with the unforgettable advices, inspiration and constant touch of so many great souls. I cannot help expressing my heart-felt gratitude to them all.

It is a great pleasure for me to expense my deepest sense of unbound gratitude and indebtedness to my perspicuous reverend mentor and supervisor Prof. (Dr.) Sankar Kumar Ghosh for his patience, motivation, enthusiasm, and immense knowledge with incessant support during every moment of my Ph.D study and research. His unstinting guidance, untiring endeavor, invaluable suggestion, constructive criticisms, constant encouragement and excellent supervision inspired me for proper execution of the work and writing of this thesis in totality. His magical wand transformed me to become an independent researcher and helped me realize the power of critical reasoning:

Besides my advisor, I would like to convey my profound gratitude and thanks to Prof. Somnath Dasgupta, the Hon’ble Vice Chancellor, Assam University-Silchar and Prof. D. Kar, Dean, Hargobind Khurana School of Life Science for giving me the opportunity to be a part of the research world in Assam University. I express my heartiest thanks and gratefulness to Dr. P.B. Mazumder, Head of the Department and all the faculty members, technical and office staff of the Department of Biotechnology, for supporting my research by providing necessary help and moral support. I also express my cordial respect to the faculty members from other departments of Assam University for their knowledge and support.
I would like to convey my sincere gratitude to Prof C S Chakraborti, Vice-Chancellor, West Bengal University of Animal and Fishery Sciences, West Bengal for allowing me to prosecute higher studies in Assam University.

I would like to express my thankfulness to the Registrar and Dean, Faculty of Veterinary and Animal Sciences, West Bengal University of Animal and Fishery Sciences, West Bengal for their kind permission and required facilities to complete this work.

I owe deepest sense of gratitude and regards to Dr. P.K. Das, Associate Professor and Head, Department of Veterinary Physiology, West Bengal University of Animal and Fishery Sciences, West Bengal for his valuable suggestion and day to day inspiration during the span of this research work which has steered me towards the completion of this research work.

It is a gratifying moment for me to convey my deepest sense of gratitude indebtedness and heartfelt thanks to Prof. S. Sanyal, Ex-Professor, Department of Veterinary Physiology for his suggestion, keen interest and valuable help throughout the research work.

I express my most sincere gratitude to my colleagues Dr K Das, Assistant Professor, Dr D Banerjee, Assistant Professor and Dr J Mukherjee, Assistant Professor of my Department of Veterinary Physiology and Dr Guru D V Pandiyan, Assistant Professor, Tamilnadu Veterinary University, Chennai for their extensive co-operation and inspiration throughout the research work.

I would like to express my effusive thanks to all the staff members under the Department of Veterinary Physiology for their keen help and selfless service rendered during my entire work.

I would like to appreciate all the research scholars of the Department Of Biotechnology especially, Pradosh for his excellent help to carry out bioinformatics and out the logistic support; Rosy, Shantanu, Joyraj, Jagadish, Monika, Miranda, Bijoya, Bony and all my lab juniors Bishal, Javed, Mohua and Sarbadev for their active co-operation and help during the experiment and shared time for deciphering knowledge in the field of my research and throughout completion of this thesis.
I feel immense pleasure to convey many thanks to my fellow scholars Fazlur, Ruhina, Mridul Das, Dr. Biswadeep Choudhuri for their active co-operation and help with smiling face every time whenever I appeal.

I must confess that the very idea of this work would never been translated into reality until the Rastriya Krishi Vikas Yojana project on “Development of a Model for Sustainable Backyard Poultry Farming in West Bengal” was run in the department involving a huge span of farmers in different zones. The untiring help from different personnel involved in the project is the major fuel to carry out this venture.

At last, but not the least I must express my heartfelt thanks to the members of my family, my elder brother Saibal Ghosh and his wife Chaitali Ghosh and my younger brother Sagar for their constant support and inspiration. I must express my thanks to my younger brother Sankha, his wife Nupur and their children Shoumik and little Shreya for their illuminative presence. I must mention my special thanks to Mrs. Anamita Ghosh and her children, Sharad and Samriddhi to inspire me throughout my research work.

I thank the Dhar Brothers for excellent binding with cave of the thesis work.

It is very much possible that I may overlook some names and that is not intentionally of course and in that case I apologies to them from my heart.

It is needless to mention that for any error or mistakes responsibility goes to me and my only.

Date: 24th June, 2014

Place: Silchar

(Probal Ranjan Ghosh)