

ACKNOWLEDGEMENT

I would like to thank Department of Livestock Development (DLD), Ministry of Agriculture and Cooperative, Bangkok, and Center for Agricultural Biotechnology, Kasetsart University, Kamphaengsaen, for allowing me to undertake my PhD research, especially DLD for research fund.

I would also like to thank my supervisor, Assoc.Prof.Dr. Voravit Siripholvat for all his help and support, specially with the proof reading of this thesis and idea guidance offering of this thesis. My thanks also go to Assoc.Prof.Dr. Neramit Sookmanee, Assoc.Prof.Dr. Worawith Wajjwalku, and Dr. Sawat Thummabood for all their help and support, especially Dr. Sawat Thummabood for giving permission of my research fund and idea guidance offering of this thesis. My Thanks also go to Prof. Dr. Charan Chantalakhana, external competent professor of final interview examination for my thesis defending, and for the proof reading of this thesis. I would also like to thank all those within Department of Livestock Development, specially Mrs. Sommart Suwanmajo, Mrs.Udomsri Intharachote, Mrs.Siriphun Morathop, and small holder farmers in AIV outbreak area, central part of Thailand, without whose samples and material support, everything would have been a great deal harder. My thanks also go to my colleagues of A311 room at Center for Agricultural Biotechnology, Kasetsart University, Kamphaengsaen campus, who are my will power.

I am also grateful to all other staffs and my friends at Center for Agriculture Biotechnology who have made my working time more pleasant: particularly Miss Patthama Srinamngeun and Miss Napawan Lekhaviphat for laboratory training, someone for instrument repairing, computer problem solving, and laboratory problem solving.

I would also like to acknowledge the help from Prof. Dr. Marcia Miller, Dr. Hele JuulMedsen, Prof. Dr. Nat Bumstead, Dr.Arune Chaiyasingh, Dr. Tadayoshi Mitsuhashi, and all those who have advice offering of MHC identification methods, some scientific papers, and my paper proofreading for publishing. A great deal of this work would have been impossible without these offering.

Finally, I would like to say a special thanks to my parents, my brothers, and my sisters without whom I would never have got this far, especially my mother who teaches me offering to help everyone, facing everything with fortitude, and easily forgiving, that can perform me strong. Specially thanks go to my grandfather who gave the valuable philosophy for my life, my grandmother who taught me to look at everything from an optimistic point of view.

Kalaya Boonyanuwat

May, 2006