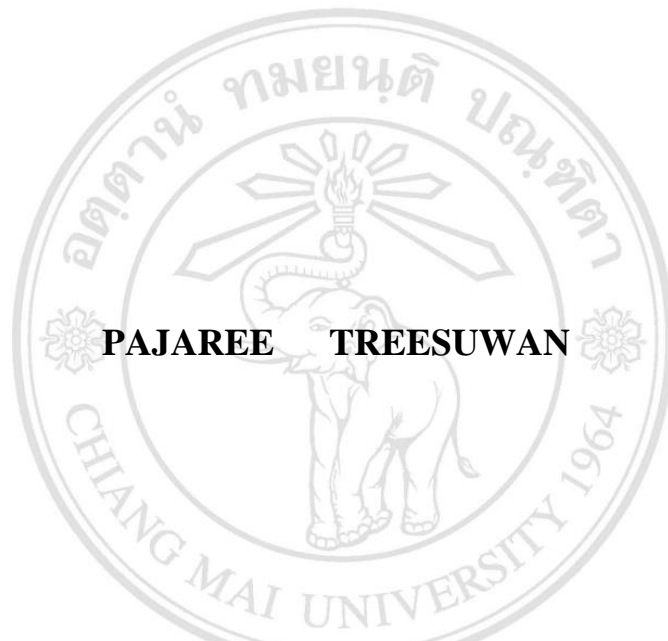


**GENETIC DIVERSITY OF HEPATITIS B VIRUS
IN PREGNANT WOMEN WITH HUMAN
IMMUNODEFICIENCY VIRUS
AND HEPATITIS B VIRUS
CO-INFECTION**



PAJAREE TREESUWAN

**MASTER OF SCIENCE
IN MEDICAL TECHNOLOGY**

ลิขสิทธิ์ของวิทยานิพนธ์ฉบับนี้
Copyright© by Chiang Mai University
All rights reserved

**GRADUATE SCHOOL
CHIANG MAI UNIVERSITY
MAY 2016**

**GENETIC DIVERSITY OF HEPATITIS B VIRUS IN PREGNANT
WOMEN WITH HUMAN IMMUNODEFICIENCY VIRUS
AND HEPATITIS B VIRUS CO-INFECTION**

PAJAREE TREESUWAN

**A THESIS SUBMITTED TO CHIANG MAI UNIVERSITY IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE
IN MEDICAL TECHNOLOGY**

GRADUATE SCHOOL, CHIANG MAI UNIVERSITY

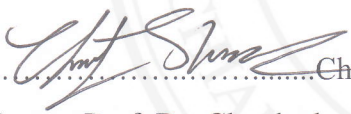
MAY 2016

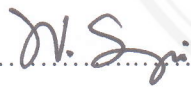
**GENETIC DIVERSITY OF HEPATITIS B VIRUS IN PREGNANT
WOMEN WITH HUMAN IMMUNODEFICIENCY VIRUS
AND HEPATITIS B VIRUS CO-INFECTION**

PAJAREE TREESUWAN

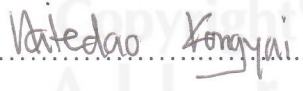
THIS THESIS HAS BEEN APPROVED TO BE A PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE
IN MEDICAL TECHNOLOGY


Examination Committee:


.....Chairman
(Assoc. Prof. Dr. Chonlaphat Sukasem)

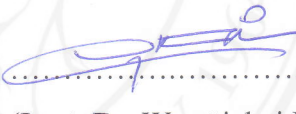

.....Member
(Asst. Prof. Dr. Wasna Sirirungsi)



.....Member
(Dr. Nicole Ngo-Giang-Huong)



.....Member
(Lect. Dr. Natedao Kongyai)


.....Member
(Lect. Dr. Woottichai Khamduang)

Advisory Committee:


.....Advisor
(Lect. Dr. Woottichai Khamduang)


.....Co-advisor
(Asst. Prof. Dr. Wasna Sirirungsi)


.....Co-advisor
(Dr. Nicole Ngo-Giang-Huong)

13 May 2016

Copyright © by Chiang Mai University

ACKNOWLEDGEMENTS

I would like to express my special appreciation and gratitude to my thesis advisor, Lect. Dr. Woottichai Khamduang, who gave excellent advice, invaluable suggestions throughout this study and encouragement from the start to success. Without his kindly help, this thesis definitely would not be completed.

I wish to express my sincere gratitude to Assistant Professor Dr. Wasna Sirirungsi, for assistances of this thesis and practical advice.

I am also deeply grateful to Dr. Nicole Ngo-Giang-Huong from Institut de Recherche pour le Développement (IRD), PHPT International Research Unit/IRD UMI 174, for her great support, encouraging and giving superior suggestion.

I would like to express my sincere thanks to Associate Professor Dr. Chonlaphat Sukasem for being a Chairman of my thesis and the examination committee members for their valuable suggestions on this thesis.

I would like to thank the Division of Clinical Microbiology, Department of Medical Technology, Faculty of Associated Medical Sciences, Chiang Mai University and PHPT International Research Unit/IRD UMI 174 for their helps in providing facilities, materials and places of my thesis experiments.

I would like to take this opportunity to extend my sincere thanks to all staffs and graduate students of Division of Clinical Microbiology, Department of Medical Technology, Faculty of Associated Medical Sciences, for their kindly help, and friendship. They have helped me stay sane through these difficult years.

I am thankful to the grant from the Graduate Study Program, Faculty of Associated Medical Sciences, Chiang Mai University; the National Research University Project under Thailand's Office of the Higher Education Commission; Faculty of Associated Medical Sciences (AMS), CMU; the Institut de Recherche pour le

Développement (IRD) UMI 174/ Programs for HIV Prevention and Treatment (PHPT),
Chiang Mai, Thailand.

Finally, I would like to express my deepest gratitude to my family for their moral support throughout the years. Their support and care helped me overcome setbacks. Many thanks were also conveying to all of my friends whose friendships greatly support me.

Pajaree Treesuwan



ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved