

**GENETIC ANALYSIS OF HEPATITIS B VIRUS (HBV) MUTANTS IN  
HBV/HIV-1 CO-INFECTED PATIENTS IN THAILAND**

**WOOTTICHAJ KHAMDUANG**

**DOCTOR OF PHILOSOPHY  
IN BIOMEDICAL SCIENCE**

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**THE GRADUATE SCHOOL  
CHIANG MAI UNIVERSITY  
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**A THESIS SUBMITTED TO THE GRADUATE SCHOOL IN  
PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF  
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THIS THESIS HAS BEEN APPROVED  
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28 September 2011

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## ACKNOWLEDGEMENTS

This Ph.D. thesis has been conducted under the International co-directed Thesis Convention between Chiang Mai University (CMU) and Université François-Rabelais de Tours (UFR), the author would like to express my sincere gratitude and deepest appreciation to all my advisors in both sides; Asst. Prof. Dr. Wasna Sirirungsi, CMU thesis advisor; Prof. Dr. Alain Goudeau, UFR thesis advisor; Dr. Nicole Ngo-Giang-Huong, CMU co-advisor, Asst. Prof. Dr. Catherine Gaudy-Graffin, UFR co-advisor, for giving me the opportunity to work with this great thesis. The author cannot thank them enough for their excellent guidance, patience, countless discussion and encouragements throughout this study. This thesis would not have been accomplished without their kindly help. The author specially thanks Dr. Ngo-Giang-Huong for inspiring me to learn and do new things in research life.

The author extend my grateful to the reviewers of this thesis, Prof. Dr. Yong Poovorawan for their hard work associated with this responsibility, and Assoc. Prof. Dr. Satawat Thongsawat for accepting to serve as another CMU co-advisor and members of the thesis committee and for their valuable suggestions and advice.

The author is also grateful to Dr. Marc Lallemand, a project director of the Program for HIV prevention and treatment (IRD UMI174/PHPT), for giving me an opportunity to work with his professional research team. The author is particularly thankful to Dr. Gonzague Jourdain for his kindly advices in study design and statistical analysis for this study. The author would like to express my gratitude to IRD UMI174/PHPT medical teams and all patients who participated in the studies.

The author thanks all past and present members of INSERM U966: Morphogenèse et antigénicité du VIH et des virus des hépatites for providing a great atmosphere to work in, and for their help with expertise and advice. Many thanks to Pr. Francis, Pr. Philippe, Pr. Denys, Tanawan, Alain M, Laura, Sayamon, Suzie, Marion, Romuald, Vincent, Eric, Nadine, Emmanuelle R, Eun-Yeung, Anne, Pauline, Elodie, Christine, Valentina, Martine and Benjamin, as well.

The author would like to express my sincere thanks to all staff members in IRD UMI174/PHPT laboratory and data management, all staff members and graduate students in the Division of Clinical Microbiology, Department of Medical Technology, Faculty of Associated Medical Sciences (AMS), CMU, for their helps and kindly suggestion.

The author thanks all colleagues in Laboratoire de Virologie Moléculaire, Institut National de la Transfusion Sanguine, Dr. Camille Sureau, Romain Julithe, Yann Le Duff for their helps and warm welcome.

The author would like to thank the IRD UMI174/PHPT, INSERM U966 and the Division of Clinical Microbiology, AMS, CMU, laboratories for their support in providing instruments, reagents, and place to study, the Faculty of Graduate Studies, CMU, and Les Ecoles Doctorales, UFR for allowing me to have this project investigated.

This thesis was supported by Agence Nationale de Recherches sur le Sida et les hépatites virales (grant number: ANRS 12-179), the Global Fund to fight AIDS, TB and Malaria, the Franco-Thai Cooperation Program in Higher Education and Research, Faculty of Associated Medical Sciences, Chiang Mai University, the

French Ministry of Foreign Affairs and the Institut de Recherche pour le Développement (IRD), France.

The author specially thanks to the IRD, the Franco-Thai Cooperation Program in Higher Education and Research, Office of the Higher Education Commission, the Ministry of Education (Thailand), and the French Ministry of Foreign Affairs for giving me scholarships during my PhD study.

Last, but not least, the author would like to express my special gratitude to my parents, Prasert and Khammai Khamduang; my brother, Supasit Khamduang, for their faith in me and for the continuous support. The author would like to thank my friends for their encouragement, support, assistance and warm friendship that will never be forgotten. A special thank goes to my girl, Duangthida Saeng-ai, who bravely supported, and understood my crazy working hours and the distance separating us.

Thank you so much, Merci beaucoup, ขอบคุณมากครับ

Wootichai Khamduang