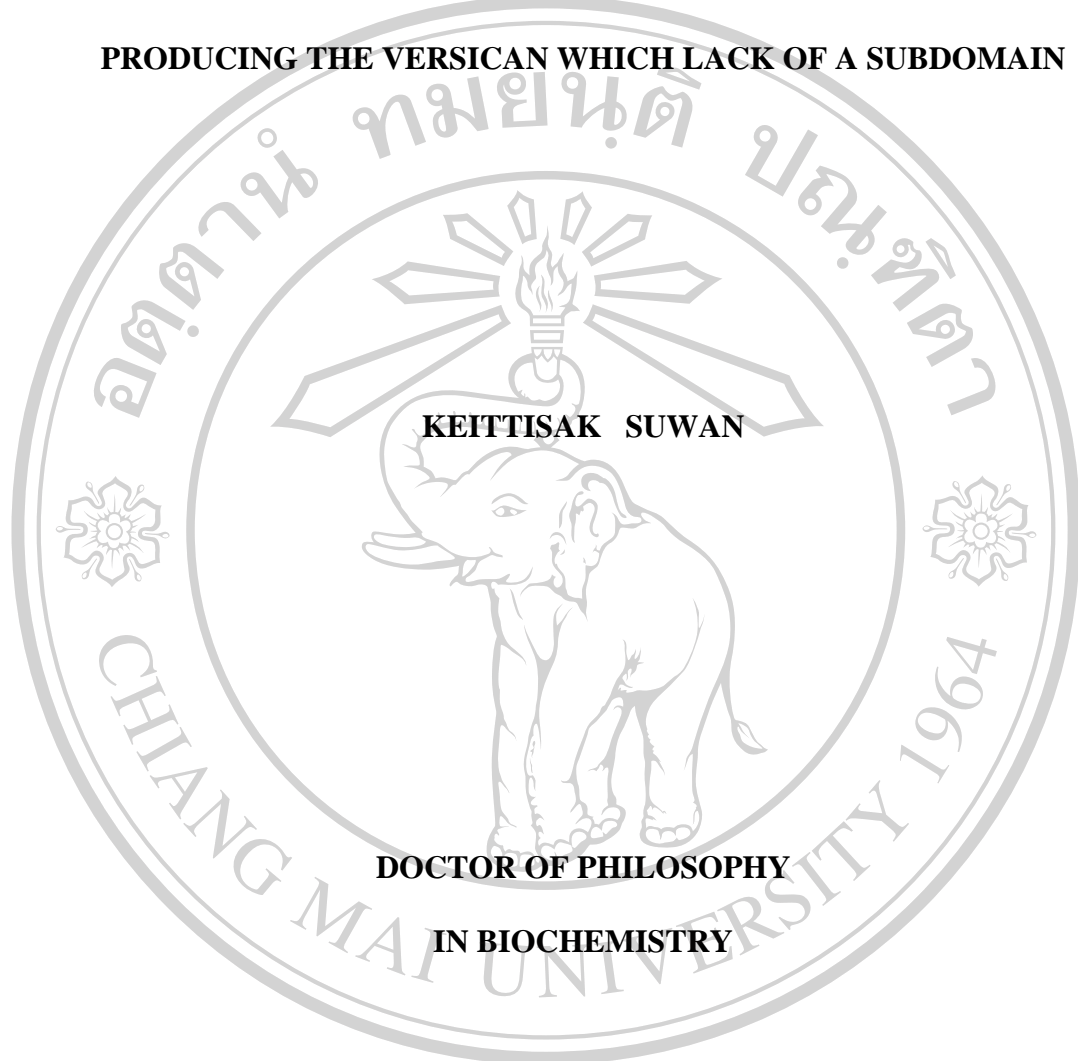


BEHAVIOR OF TRANSGENIC MOUSE EMBRYONIC FIBROBLASTS

PRODUCING THE VERSICAN WHICH LACK OF A SUBDOMAIN



KEITTISAK SUWAN

DOCTOR OF PHILOSOPHY

IN BIOCHEMISTRY

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

Copyright© by Chiang Mai University

All rights reserved

THE GRADUATE SCHOOL

CHIANG MAI UNIVERSITY

MARCH 200

**BEHAVIOR OF TRANSGENIC MOUSE EMBRYONIC FIBROBLASTS
PRODUCING THE VERSICAN WHICH LACK OF A SUBDOMAIN**

KEITTISAK SUWAN

**A THESIS SUBMITTED TO THE GRADUATE SCHOOL IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY**

IN BIOCHEMISTRY

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

**THE GRADUATE SCHOOL
CHIANG MAI UNIVERSITY**

MARCH 2009

**BEHAVIOR OF TRANSGENIC MOUSE EMBRYONIC FIBROBLASTS
PRODUCING THE VERSICAN WHICH LACK OF A SUBDOMAIN**

KEITTISAK SUWAN

**THIS THESIS HAS BEEN APPROVED
TO BE A PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY
IN BIOCHEMISTRY**

EXAMINING COMMITTEE

Kongtawelert P. **CHIRPERSON**

Assoc. Prof. Dr. Prachya Kongtawelert

Siriwan **MEMBER**

Assoc. Prof. Dr. Siriwan Ongchai

Ratana Banjerdpongchai **MEMBER**

Assoc. Prof. Dr. Ratana Banjerdpongchai

Preeyanat **MEMBER**

Assoc. Prof. Dr. Preeyanat Vongchan

Nantarit Chokethaworn **MEMBER**

Assist. Prof. Dr. Nantarit Chokethaworn

6 March 2009

ACKNOWLEDGEMENT

The author wishes to express his sincere gratitude and deep appreciation to his advisor, Assoc. Prof. Dr. Prachya Kongtawelert, for his patient guidance, precious advice, and encouragement during the preparation and investigation of this thesis.

He would like to express his gracious thank to his co-advisor, Prof. Dr. Hideto Watanabe, and Prof. Dr. Koji Kimata, Institute for Molecular Science of Medicine, Aichi Medical University, for their valuable advice, for providing laboratory facilities and financial support during his stay in their laboratory. He would like to give special thanks to Dr. Sonoko Hatano, for her excellent training in cell biology, immunological technique, and animal model experiment. He would like to thank all staffs in Prof. Koji Kimata's laboratory for their kindness and friendship.

He would like to acknowledge the grant for foreign researcher at Aichi Medical University for the financial support that made this work possible. He would like to thanks Assist. Prof. Dr. Siriwan Ongchai for her helps with best suggestions and any patient instruction. He also would like to thank his seniors, Dr. Peraphan PothaCharoen, Dr. Kittiwat Kalayanamitra, and Dr. Duriya Fongmoon for their support and encourage. Many thanks for his friends and colleagues in the Department of Biochemistry, Faculty of Medicine, Chiang Mai University for their kindness and friendship. Finally, He would like to express his deepest appreciation to his parents and his brother for their love and encouragement during this study.

Keittisak Suwan