

**CLONING AND CHARACTERIZATION OF  
DOPAMINE RECEPTOR FROM BLACK TIGER SHRIMP**

**SUCHITRAPORN SUKTHAWORN**

**A THESIS SUBMITTED IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR  
THE DEGREE OF MASTER OF SCIENCE  
(MOLECULAR GENETICS AND GENETIC ENGINEERING)  
FACULTY OF GRADUATE STUDIES  
MAHIDOL UNIVERSITY  
2011**

**COPYRIGHT OF MAHIDOL UNIVERSITY**

Thesis  
entitled  
**CLONING AND CHARACTERIZATION OF  
DOPAMINE RECEPTOR FROM BLACK TIGER SHRIMP**

.....  
Miss Suchitraporn Sukthaworn  
Candidate

.....  
Assoc. Prof. Apinunt Udomkit,  
Ph.D.  
Major advisor

.....  
Prof. Emeritus Sakol Panyim,  
Ph.D.  
Co-advisor

.....  
Asst. Prof. Chalernporn Ongvarrasopone,  
Ph.D.  
Co-advisor

.....  
Ms. Pongsopée Attasart,  
Ph.D.  
Co-advisor

.....  
Prof. Banchong Mahaisavariya  
M.D., Dip Thai Board of Orthopedics  
Dean  
Faculty of Graduate Studies  
Mahidol University

.....  
Assoc. Prof. Apinunt Udomkit  
Program Director  
Master of Science Program in  
Molecular Genetics and Genetic  
Engineering  
Institute of Molecular Biosciences  
Mahidol University

Thesis  
entitled  
**CLONING AND CHARACTERIZATION OF DOPAMINE  
RECEPTOR FROM BLACK TIGER SHRIMP**

was submitted to the Faculty of Graduate Studies, Mahidol University  
for the degree of Master of Science (Molecular Genetics and Genetic Engineering)  
on  
April 7, 2011

.....  
Miss Suchitraporn Sukthaworn  
Candidate

.....  
Assoc. Prof. Apinunt Udomkit,  
Ph.D.  
Member

.....  
Assoc. Prof. Wipa Chungjatupornchai  
Ph.D.  
Chair

.....  
Ms. Pongsopee Attasart,  
Ph.D.  
Member

.....  
Prof. Emeritus Sakol Panyim,  
Ph.D.  
Member

.....  
Asst. Prof. Wanchai Assavalapsakul,  
Ph.D.  
Member

.....  
Asst. Prof. Chalernporn Ongvarrasopone,  
Ph.D.  
Member

.....  
Prof. Banchong Mahaisavariya,  
M.D., Dip Thai Board of Orthopedics  
Dean  
Faculty of Graduate Studies  
Mahidol University

.....  
Prof. Prasert Auewarakul,  
M.D., Dr. med.  
Director  
Institute of Molecular Biosciences  
Mahidol University

## ACKNOWLEDGEMENTS

This M.Sc. thesis will never be successful without the valuable helps from these people to whom I would like to express my deepest and sincere gratitude.

I would like to sincerely thank to my greatest advisor, Assoc. Prof. Apinunt Udomkit for good opportunity in this study, his kindness, valuable advice as well as good suggestion in my lab. Importantly, tolerance in reading and proof my thesis.

I would like to thank my thesis committees, Prof. Emeritus Sakol Panyim, Asst. Prof. Chalernporn Ongvarrasopone, Dr. Pongsopee Attasart for their valuable discussion and recommendation. I would like to thank external committee, Asst. Prof. Wanchai Assavalapsakul for participation in thesis defense examination and kindly advice.

I gratefully thank Asst. Prof. Dr. Witoon Tirasophon for helps, teaching and good suggestion in cell culture technique.

I would like to thank all my friends and all members of C204 lab, Mr. Teerapong Ho, Mr. Ponsit Satapondacha, Ms. Suchada Saengwiman and Ms. Kitiya Rujimongkol for helpful, good advice, friendship and a lot of encouragement.

Special thanks to my good friend, Mr. Suparat Taengchaiyaphum for his kindness, good comments and encouragement. I would like to thank all members in shrimp groups and all staffs of the Institute of Molecular Biosciences, for sincerely helps, generosity and friendship.

I would like to express the deep gratitude to my family and Mr. Thawatchai Katepimol for their eternal love, happiness and a lot of encouragement.

This study was supported by grant from National Research Council of Thailand for financial support and Graduate Studies of Mahidol University Alumni Association for partially supported the expense for my M.Sc. thesis.

Suchitraporn Sukthaworn