

**MOLECULAR CHARACTERIZATION AND GENE
EXPRESSION OF DIAPAUSE HORMONE AND
PHEROMONE BIOSYNTHESIS ACTIVATING
NEUROPEPTIDE IN BAMBOO BORER,**

Omphisa fuscidentalis

The seal of Chiang Mai University is a circular emblem. It features a central figure of an elephant standing and facing left. Above the elephant's head is a five-pointed star with a flame-like center. The entire emblem is encircled by a border containing the university's name in Thai script at the top and 'CHIANG MAI UNIVERSITY 1964' in English at the bottom.

SUPHAWAN SUANG

**DOCTOR OF PHILOSOPHY
IN BIOLOGY**

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**GRADUATE SCHOOL
CHIANG MAI UNIVERSITY**

MAY 2016

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OF DIAPAUSE HORMONE AND PHEROMONE BIOSYNTHESIS
ACTIVATING NEUROPEPTIDE IN BAMBOO BORER,
*Omphisa fuscidentalis***

The seal of Chiang Mai University is a circular emblem. It features an elephant in the center, facing left, with a traditional Thai umbrella (parasol) above its head. The text "อิตตมานันท์ ทมยันต์ ปณฺหิตา" is written in Thai script along the top inner border, and "CHIANG MAI UNIVERSITY 1964" is written in English along the bottom inner border. There are decorative floral motifs on the left and right sides of the inner circle.

SUPHAWAN SUANG

**A THESIS SUBMITTED TO CHIANG MAI UNIVERSITY IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY**

IN BIOLOGY

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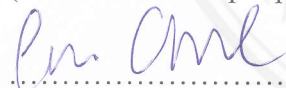
SUPHAWAN SUANG

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

Examination Committee:

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(Prof. Dr. Theeraphap Chareonviriyaphap)

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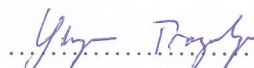
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(Prof. Dr. Kiyoshi Hiruma)

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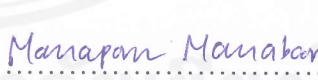
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.....Co-advisor

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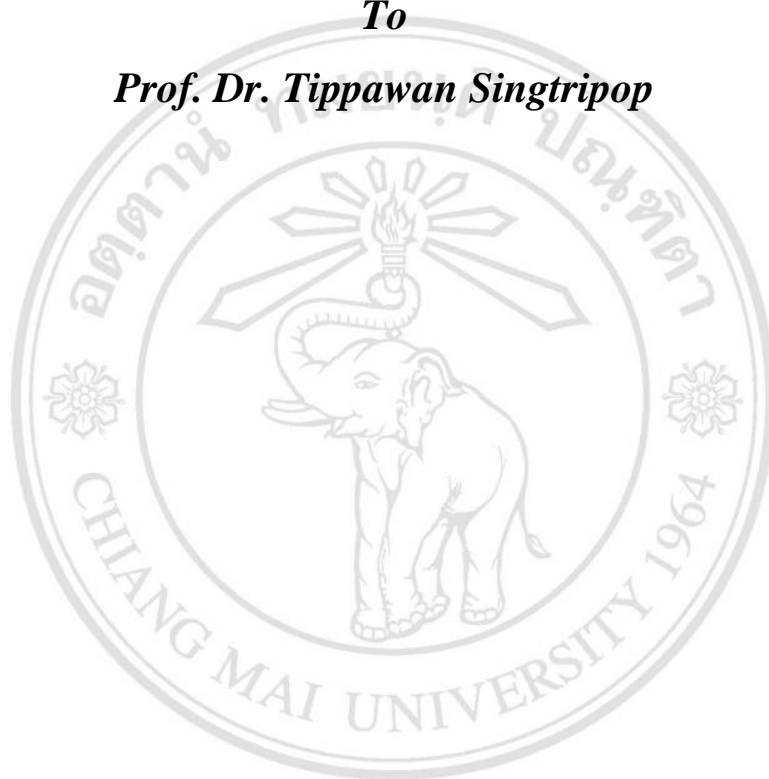
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10 May 2016

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To
Prof. Dr. Tippawan Singtripop



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Suphawan Suang