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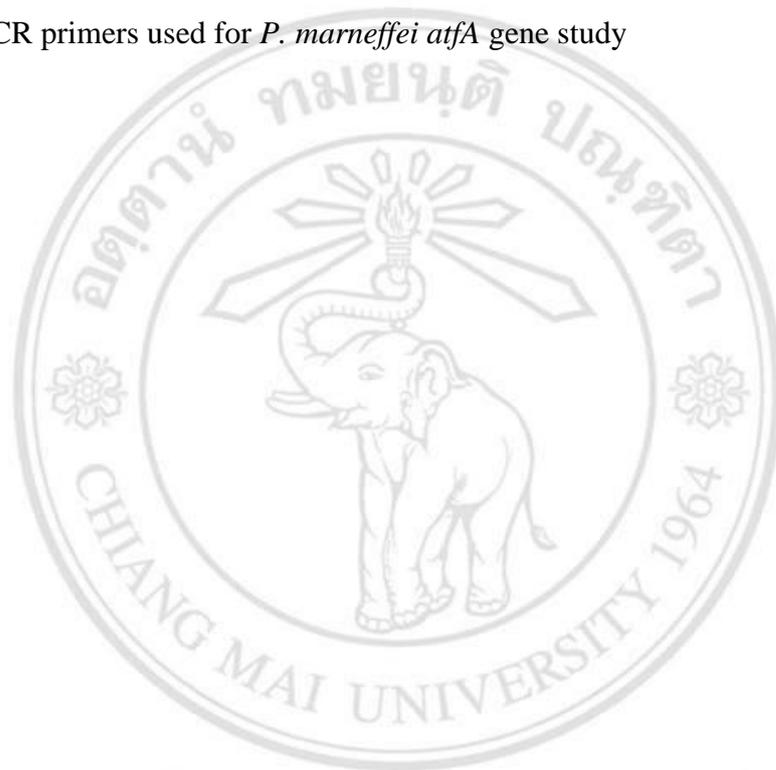
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LIST OF ABBREVIATIONS

AIDS	Acquired immunodeficiency syndromes
ATCC	American Type Culture Collection
BLAST	Basic Local Alignment Search Tools
BHI	Brain heart infusion
bp	Base pair
cDNA	Complementary deoxyribonucleic acid
CFU	Colony forming unit
cm	Centrimeter
CO ₂	Carbon dioxide
Cpe	Catalase-peroxidase
DEPC	Diethylpyrocarbonate
DMEM	Dulbecco's modified Eagle's medium
DNA	Deoxyribonucleic acid
DNaseI	Deoxyribonuclease I
EDTA	Ethylenediamine tetra acetic acid
<i>et al.</i>	And others
g	Gram (s)
x g	gravity
HIV	Human immunodeficiency virus
h	Hour (s)
H ₂ O ₂	Hydrogen peroxide
kb	Kilobase
kDa	Kilodalton
l	Liter
lbs	Pounds
LB	Luria-Bertani medium
M	Molar
MM	Minimal medium

MEA	Malt extract agar
mg	Milligram (s)
min	Minute (s)
ml	Milliliter (s)
mm	Millimeter
mM	Millimolar
mRNA	Messenger ribonucleic acid
MW	Molecular weight
NaOH	Sodium hydroxide
NCBI	National Center for Biological Information
ng	Nanogram
nm	Nanometer
no.	Number
OD	Optical density
ORF	Open reading frame
PCR	Polymerase chain reaction
PDA	Potato dextrose agar
RNA	Ribonucleic acid
RNase	Ribonuclease
ROS	Reactive oxygen species
RPMI	Roswell Park Memorial Institute medium
rpm	Revolution per minute
rRNA	Ribosomal ribonucleic acid
RT-PCR	Reverse transcription-polymerase chain reaction
SD	Standard deviation
SDA	Sabouraud dextrose agar
SDB	Sabouraud dextrose broth
SDS	Sodium dodecyl sulfate
s	Second
Sod	Superoxide dismutase
<i>Taq</i>	<i>Thermus aquaticus</i>

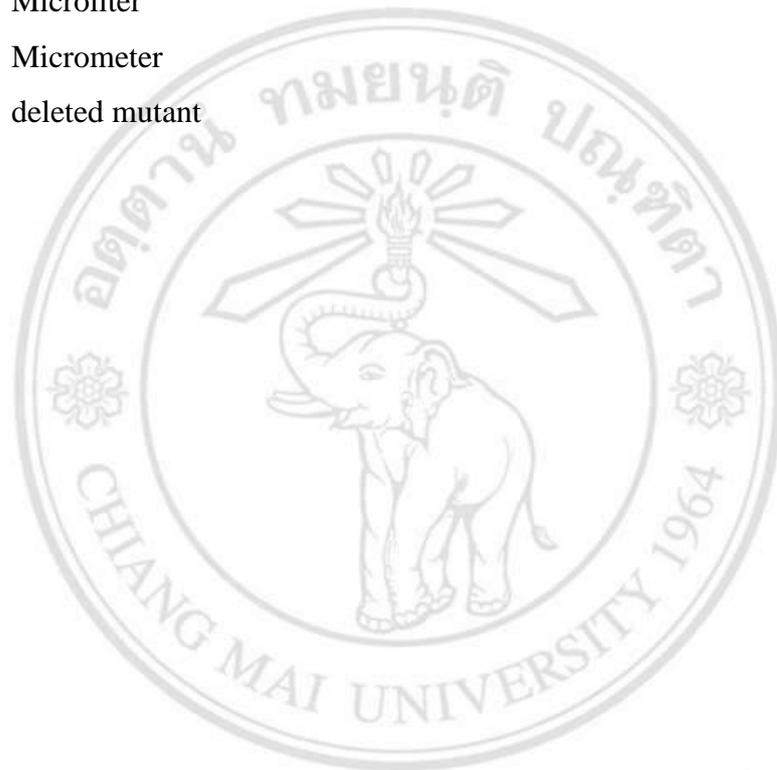
tRNA	Transfer ribonucleic acid
U	Unit (s)
UV	Ultraviolet
V	Volt
Wt	Weight



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LIST OF SYMBOLS

%	Percent
°C	Degree Celsius
μg	Microgram
μl	Microliter
μm	Micrometer
Δ	deleted mutant



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ข้อความแห่งการเริ่มต้น

- 1) หน้าที่ย่อยยีน *sakA* และ *atfA* นั้นได้มีการศึกษาในเชื้อราหลายชนิดทั้งที่เป็นยีสต์และราสาย อย่างไรก็ตามก็ยังไม่มีการศึกษาหน้าที่ของยีนทั้งสองนี้ในเชื้อราสองรูปคือเชื้อเพนนิซิลีียม มาร์เนฟไฟไอ วิทยานิพนธ์นี้เป็นงานนำเสนอครั้งแรกถึงบทบาทของยีน *sakA* และ *atfA* ในการตอบสนองต่อสถานะเครียดแบบออกซิเดทีฟ การตอบสนองต่อสถานะเครียดแบบออกซิเดทีฟมีความจำเป็นต่อการเจริญของเชื้อชนิดนี้ภายในเซลล์มาโครฟาจ และการก่อให้เกิดโรคแบบแพร่กระจายในผู้ป่วยที่มีภูมิคุ้มกันบกพร่อง
- 2) โดยทั่วไป การสร้างเชื้อกลายพันธุ์ด้วยวิธี split marker recombination ทำได้โดยวิธี PCR-based หรือวิธี plasmid-based การศึกษานี้แนะนำเสนอเป็นครั้งแรกในการสร้างเชื้อกลายพันธุ์ที่ไม่มียีน *atfA* โดยประยุกต์วิธี split marker recombination ด้วยการใช้วิธี PCR-based ร่วมกับวิธี plasmid-based ซึ่งวิธีการนี้สามารถนำไปใช้ในการสร้างเชื้อกลายพันธุ์ของยีนอื่นๆ ที่สนใจในเชื้อเพนนิซิลีียม มาร์เนฟไฟไอหรือในเชื้อราชนิดอื่นๆ ได้

STATEMENT OF ORIGINALITY

- 1) The function of *sakA* and *atfA* genes had been studied in many fungi including yeasts and filamentous fungi. However, the exact functions of these two genes in a dimorphic fungus, *Penicillium marneffeii* have never been defined. In this thesis, the roles of *sakA* and *atfA* genes on oxidative stress response are firstly proposed. Response to this kind of stress is essential for survival of *Penicillium marneffeii* inside host macrophage and systemic infection in immunocompromised patients.
- 2) Generally, PCR-based or plasmid-based method of split marker recombination is used to generate mutant strain of gene of interest. This study firstly proposed the combination of PCR-based and plasmid-based methods for construction of *P. marneffeii atfA* mutant strain. This combination technique can be used for generation mutation of other genes of interest in *P. marneffeii* or in other fungi.

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