รายงานฉบับสมบูรณ์

โครงการ l· ĭ Ķ Ĵ ŏ ĝ Ň Ĕ ĵ Ģ Ň ĭ ń Ĩ Ň Ĕ Ņ Ķ
The Collection, Isolation and Taxonomy of Insect Fungi 204
(รหัสโครงการ 5710301)

ระยะเวลาศึกษาวิจัย 29Ĕ Ķ Ĕ ĝ ĵ Ň Ĕ 2557 ė Ĵ Ȯ

เสนอ

กรมอุทยานแห่งชาติ สัตว์ป่า และพันธุ์พืช

โดย

นางสุชาดา มงคลสัมฤทธิ์
และคณะวิจัย

ห้องปฏิบัติการปฏิสัมพันธ์ของจุลินทรีย์
ศูนย์พันธุวิศวกรรมและเทคโนโลยีชีวภาพแห่งชาติ

โครงการ l· ĭ Ķ Ĵ ŏ ĝ Ň Ĕ ţ Ģ Ň ĭ ń Ĩ Ň Ĕ Ņ Ķ
The Collection, Isolation and Taxonomy of Insect Fungi 2014
(รหัสโครงการ 5710301)

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Ń Ň Ī ĵ Ņ Ĕ Ķ ij Ņ ė ţ Ģ Ň ĭ ń Ĩ Ň
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ħ. Ķ igel Hywel Jones Mitson Biotec, Thailand
ħ. Ĵ Ķoseph Spatafora Oregon State University

ţ Ō Ɵ l· ŏ ĭ ĕ Ķ Ɵ Ĵ Ņ Ķ η Ń Ĭ Ĵ ń Ĕ Ń Ň ĕ ń ĵ Ȯ l· Ņ ĕ Ņ Ķ ĵ Ţ Ȯ Ő κ Ń Ĭ ń Ĕ Ļ ʼn

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หลักการและเหตุผล

[illegible] (Insect pathogenic fungi) [illegible] Ascomycota [illegible] (*Ophiocordyceps sinensis*) [illegible] *Verticillium hemipterigenum* [illegible] 15 [illegible] 40 [illegible] 20 [illegible] International Mycological Congress 10 [illegible] (http://www.imc10.com/2014/home.html) [illegible] 25 [illegible]

วัตถุประสงค์

[illegible]

<u>วิธีการดำเนินการ</u>

การดำเนินการจัดโครงการอบรมแบ่งออกเป็น 3 ส่วนคือ

1. <u>ภาคบรรยาย</u>

[illegible]

2. <u>การปฏิบัติงานในภาคสนาม</u>

[illegible]

3. <u>การปฏิบัติงานในห้องปฏิบัติการ</u>

3.1 [illegible] 1995a, 1995b, 1996, 1997a, 1997b, 1998; Lumyong et al. 2007, 2008, 2010, 2012; Mongkolsamrit et al. 2009, [illegible]

3.2 [illegible]

- [illegible] *Gibellula*, *Akanthomyces* [illegible] *Raesilomyces* [illegible]
- [illegible] *Aschersonia* [illegible]
- [illegible] *Ophiocordyceps*, *Tolypocladium*, *Hypocrella* [illegible]

อาหารเลี้ยงเชื้อ

ŏ ĝ ŊŘ l· Ķ Ņ Ě η l· ő Ķ ė ĭ Ĭ Ő Ĵ κ PDA (Potato Dextrose Agar) Ň Ġ
Ľ Ŝ Ņ ľ Ķ ń ĭ Ě Ňŋ Ą Ŏ ĵ l· Ě ĝ Ňŋ Ą Ŏ Ŝ Ňŋ Ą Ŏ Ňŋ Ą Ŏ Ňŋ Ą Ŏ

International Workshop on
The Collection, Isolation and Taxo nomy of Ascomycetous Invertebrate -Pathogenic Fungi
29 July ð1 August 2014
Khao Yai National Park, Nakhon Ratchasima, Thailand

Tuesday 29 July 2014

13:00	Be prompt at the meeting point *1st floor, BIOTEC building, Thailand Science Park, Pathum Thani*
13:00 ð16:00	Travel to Khao Yai National Park, Nakhon Ratchasima
16:00 ð18:00	Check in at Surasawadee Camp,Khao Yai National Park, Nakhon Ratchasima
18:00 ð19:30	Dinner
20:00 ð20:45	L e c t u r e on òHypocreales: overview: Cordycipitaceae, Clavicipitaceae, O p h i o c o r d y c i p i t a c e a e ó By Dr. Joseph Spatafora Oregon State University, USA

Wednesday 30 July 2014

07:00 ð08:00	Breakfast
08:00 ð10:30	Fieldwork and collecting
10:30 ð11:00	Travel back to the station
11:00 ð12:00	Lab demonstration: Isolation, slide preparation
12:00 ð13:30	Lunch
13:30 ð15:30	Laboratory: Macro & micromorphology
15:30 ð16:00	Coffee Break
16.00 ð16:45	Lecture on òT a x o n o m y a n d b i o l o g y o f t h e C o r d y c i p i t a c By Dr. Nigel Hywel-Jones Milton Biotech Co., Ltd, Thailand
16:45 - 17:30	Lecture on òT a x o n o m y a n d b i o l o g y o f t h e O p h i o c o r d y c i By Dr. Joseph Spatafora Oregon State University, USA
17:30 - 18:00	Free time
18:00 - 19:30	Dinner
19:30 - 20:15	Lecture on òT a x o n o m y a n d b i o l o g y o f t h e C l a v i c i p i t a c e a e ó By Dr. Jennifer Luangsa-ard National Center for Genetic Engineering and Biotechnology, Thailand

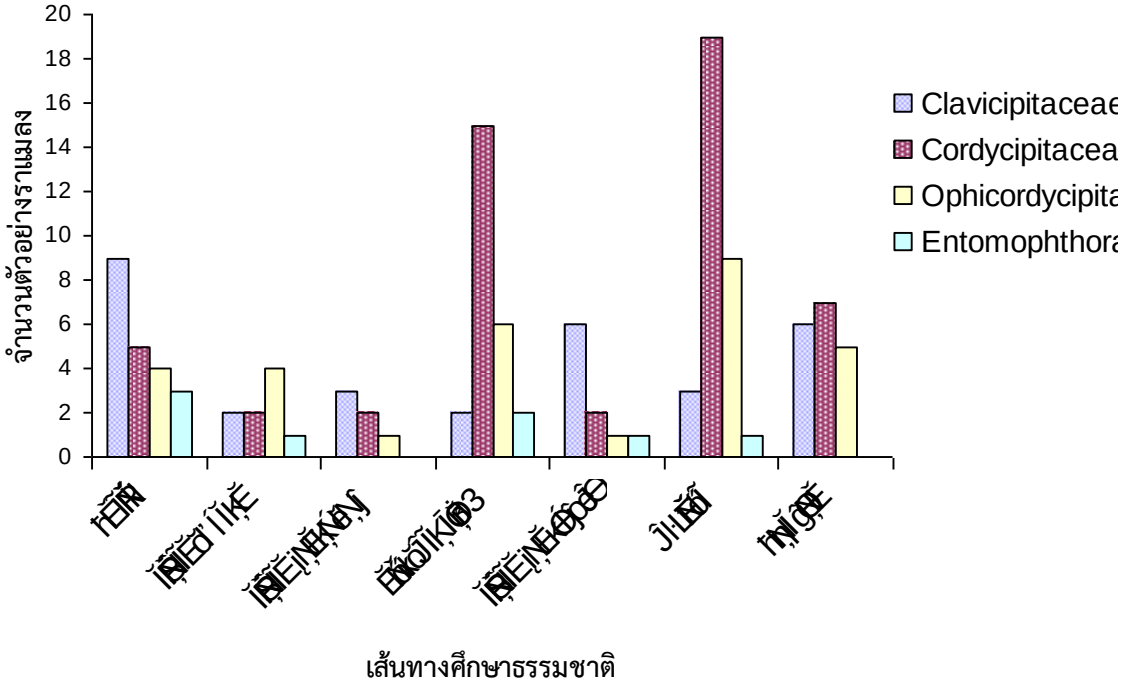
Thursday 31 July 2014

07:30 ð08:30	Breakfast
08.30 ð12:00	Morning forest survey + lab demonstration
12:00 ð13:30	Lunch
13:30 ð15:30	Laboratory
15:30 ð16:00	Coffee break
16:00 ð16:45	Lecture on òA b a c k g r o u n d o n t h e d e v e l o p m e n t o f t h e i n T h a i l a n d ó By Dr. Nigel Hywel-Jones Milton Biotech Co., Ltd, Thailand
16:45 ð18:00	Laboratory
18.00 ð19.30	Dinner
19:30 - 20:15	L e c t u r e on òlensoenc to f u n g i : t h e i m p a c t o f 1 F 1 N : ó By Dr. Joseph Spatafora Oregon State University, USA

Friday 1 August 2014

07:00 ð08:30	Breakfast
08:30 ð10:30	Laboratory review of the fungi record ed from Khao Yai By Dr. Jennifer Luangsa-ard National Center for Genetic Engineering and Biotechnology, Thailand
10:30 - 11:00	Coffee break
11:00 - 12:00	General discussion
12:00 - 13:30	Lunch
13:30 - 15:00	Travel to National Center for G enetic Engineering and Biotechnology (BIOTEC)

2. การสำรวจและการจำแนกชนิดราก่อโรคบนแมลง



รูปที่ 1:

ŏ ĝ Ŋ Ř I· Ķ Ņ Ě Ch avicoprkaceae ĕ ĕ ĕ ŏ Ĵ Ĺ ŝ Ě Ņ Ĉ ĸ Ĭ ŕ ŕ Ĕ ŏ Ĭ Ĉ Ĝ ĕ Ĭ Ŝ Ī Ŋ Ŏ Ĕ Ŋ Ĕ L
ě Ņ Ě κ ń Ě ţ Ħ Ń Ī Ņ Ě Ľ ń Ħ ġ Ņ 7 Ĭ Ľ Ě Ŋ ţ ĭ k Ĵ Ŏ Ŋ Ŏ Ĉ 4 Ĝ Ŋ Ķ Ĵ Ñ Ŋ ħ ĸ ŏ ŏ ĕ ĝ Ŝ ħ Ŋ Ě Ŏ ħ
Ĭ Ņ Ĵ Ĺ Ņ Ě Ī ň ŗ Ȯ

Ĭ Ņ Ĵ Ĺ Ĵ Ĕ Ŝ Ī Ŋ ň ŕ Ĭ Ŏ κ Ń ĝ Ĭ Ň ħ ě Ch ě v i ĩ p ŕ t a Ĉ e a ī ĝ ň ŋ ŗ Ŋ Ľ Ě Ŝ Ķ Ŋ Ŋ Ķ Ě Ĭ ŋ ě l· ĭ ŏ Ĭ Ķ Ĉ
ī Ķ Ķ Ĵ ĝ Ņ Ĭ Ń

ชนิด	เส้นทางศึกษาธรรมชาติ						
	ดงติ้ว	น้ำตกเหวนรก	น้ำตกผากระจาย	กิโลเมตร 33.	น้ำตกผากล้วยไม้	มอสิงโต	ด่านช้าง
Aschersonia badia	-	-	-	-	1	-	-
Aschersonia hypocreoidea	1	-	-	-	-	-	-
Aschersonia marginata	1	-	-	-	-	-	-
Aschersonia minutispora	1	-	-	-	-	-	-
Aschersonia oxystroma	1	-	-	-	1	-	-
Aschersonia placenta	-	-	-	1	1	1	1
Aschersonia raciborskii	-	-	-	-	2	1	-
Conoideocrella luteorostrata	-	-	2	-	-	-	-
Conoideocrella tenuis	-	-	-	-	-	-	2
Cosmospora diploa	1	-	-	-	-	-	-
Hyperdermium bertonii	1	-	-	-	-	-	-
Hyperdermium sp	-	1	-	1	-	2	1
Hypocrella discoidea	1	-	1	-	-	-	1
Moelleriella raciborskii	1	1	-	-	-	-	-
Paecilomyces cinnamomeus	1	-	-	-	1	-	1

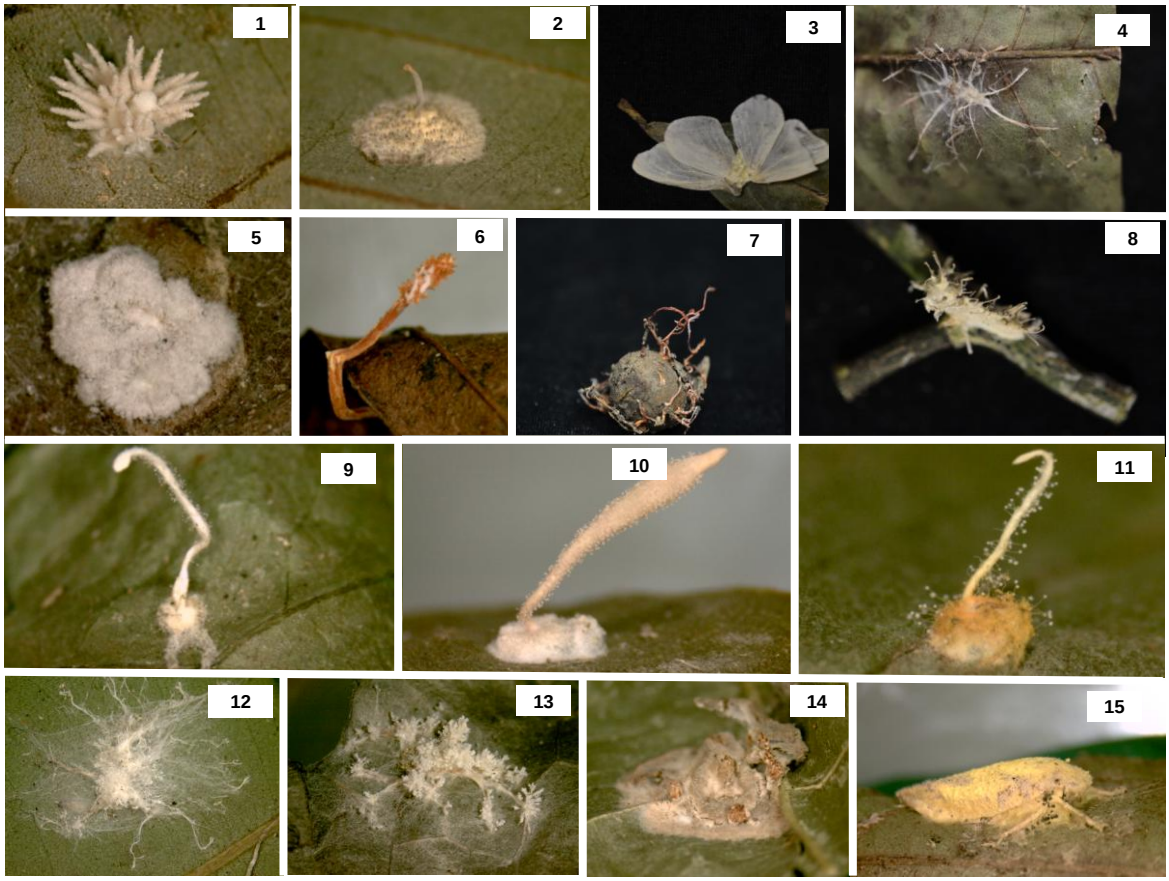
[illegible]

1) *Aschersonia minutispora*
2) *Aschersonia placenta*
3) *Conoideocrella tenuis*
4) *Conoideocrella luteorostrata*
5) *Hyperdermium bertonii*
6) *Hyperdermium* sp.
7) *Hypocrella discoidea*
8) *Moelleriella raciborskii*
9) *Paecilomyces cinnamomeus*

[illegible]

[illegible]

ชนิด	เส้นทางศึกษาธรรมชาติ						
	ดงติ้ว	น้ำตกเหวนรก	น้ำตกผากระจาย	กิโลเมตร 33.	น้ำตกผากล้วยไม้	มอสิงโต	ด่านช้าง
Akanthomyces arachnophilus	1	-	-	-	-	-	-
Akanthomyces cinereus	1	-	-	-	-	-	-
Akanthomyces novoguineensis	-	-	-	1	-	3	1
Akanthomyces pistillariformis	-	-	-	1	-	3	-
Akanthomyces sp.	-	-	-	-	-	1	1
Akanthomyces websteri	-	-	-	-	-	1	-
Beauveria sp.	-	-	-		-	-	1
Cordyceps cardinalis	-	-	-	2	-	-	-
Cordyceps cf. *martialis*	1	-	-	-	-	-	1
Cordyceps ninchukispora	-	-	-	-	2	-	-
Cordyceps sp.	-	-	-	2	-		-
Cordyceps tuberculata	-	-	-	-	-	2	-
Gibellula sp.	-	-	1	4	-	1	-
Gibellula clavulifera	-	-	-	-	-	1	-
Gibellula mirabilis	-	-	-	1	-	-	-
Gibellula pulchra	-	-	-	1	-	-	-
Isaria javanica	-		-	-	-	4	1
Isaria sp.	1	1	-	-	-	1	2
Isaria tenuipes	-	-	-	1	-	2	-
Torrubiella sp.	1	-	-	1	-	-	-
Verticillium hemipterigenum	-	1	1	1	-	-	-



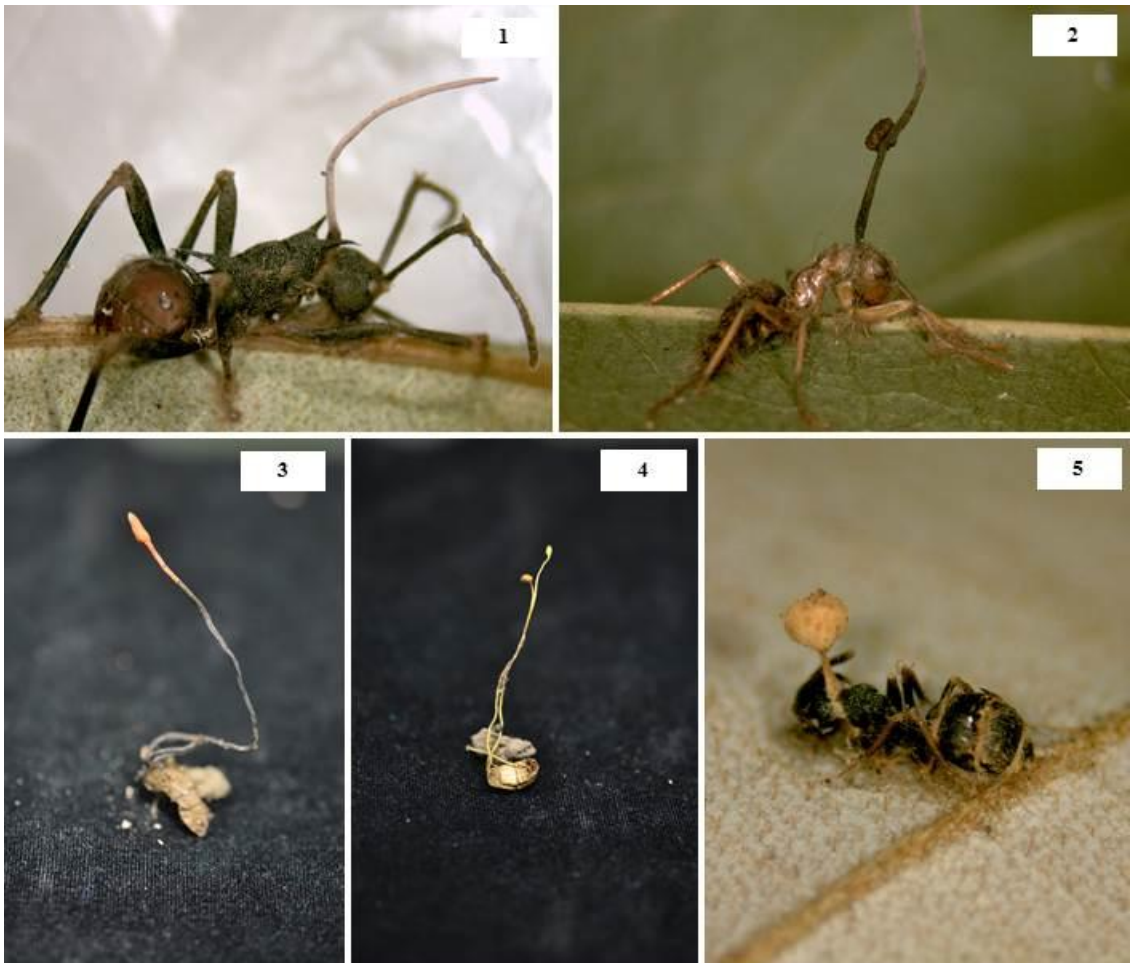
[illegible]

1) *Akanthomyces novoguineensis*
2) *Akanthomyces* sp.
3) *Akanthomyces pistillariiformis*
4) *Akanthomyces websteri*
5) *Beauveria* sp.
6) *Cordyceps cardinalis*
7) *Cordyceps ninchukispora*
8) *Cordyceps tuberculata*
9) *Gibellula* sp.
10) *Gibellula mirabilis*
11) *Gibellula* sp.
12) *Isaria* sp.
13) *Isaria javanica*
14) *Torrubiella* sp.
15) *Verticillium hemipterigenum*

[illegible]

[illegible]

ชนิด	เส้นทางศึกษาธรรมชาติ						
	ดงติ้ว	น้ำตกเหวนรก	น้ำตกผากระจาย	กิโลเมตร 33.	น้ำตกผากล้วยไม้	มอสิงโต	ด่านช้าง
Hirsutella formicarum	1	1	-	1	-	2	1
Hirsutella nivea	-	-	-	1	-	-	-
Hirsutella sp.	-	-	-	-	-	1	1
Hymenostilbe aurantiaca	-	1	-	-	-	1	-
Hymenostilbe communis	-	-	-	-	-	1	-
Hymenostilbe dipterigena	-	-	-	-	1	-	-
Ophiocordyceps bruneipunctata	-	-	-	1	-	-	-
Ophiocordyceps communis	1	-	-	1	-	2	1
Ophiocordyceps myrmecophila	1	1	1	1	2	-	1
Ophiocordyceps nutans	-	-	-	-	-	-	1
Ophiocordyceps pseudoloydii	1	1	-	1	-	-	-
Ophiocordyceps sphecocephala	-	-	-	-	-	1	-
Ophiocordyceps unilateralis	-	-	-	1	-	1	-



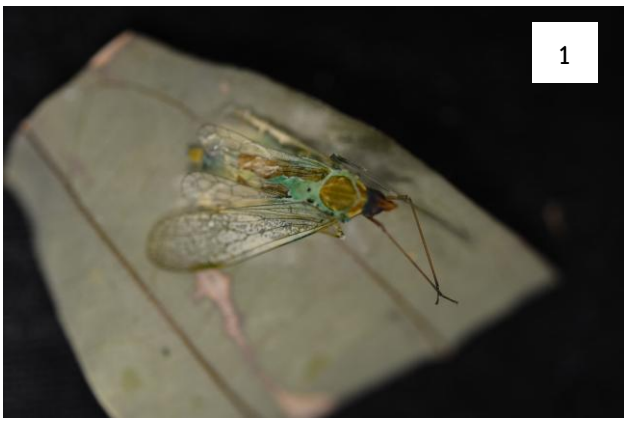
[illegible]

1) *Hirsutella formicarum*
2) *Ophiocordyceps unilateralis*
3) *Ophiocordyceps sphecocephala*
4) *Ophiocordyceps nutans*
5) *Ophiocordyceps pseudoloydii*

[illegible]

[illegible]

ชนิด	เส้นทางศึกษาธรรมชาติ						
	ดงติ้ว	น้ำตกเหวนรก	น้ำตกผากระจาย	กิโลเมตร 33.	น้ำตกผากล้วยไม้	มอสิงโต	ด่านช้าง
Erynia sp.	-	-	-	1	-	-	-
Pandora dipterigena	3	1	-	1	1	1	-



[illegible]

1) *Erynia* sp.
2) *Pandora dipterigena*

ตารางที่ 5 ě Θ l· Ĵ Ō κ Ķ Ņ Ě η l· ő Ķ ė ĭ Ĭ Ő Ĵ κ Ě Ī ň ŗ Ľ Ŝ Ŋ ŏ Ķ Ľ Ĺ ě Ĭı Ī ĭ Ņ ě Ě Ņ Ō Ě ŏ Ľ Θ Ĭ Ī Ņ Ě Ļ ʼn Ě ļ Ņ

Original code	Genus	Epithet	Family	Substrate	Site
KY001	Ophiocordyc	pseudoloydii	Ophiocordycipitaceae	Hymenoptera ant	Dong tuew
KY002	Ophiocordyc	communis	Ophiocordycipitaceae	Isoptera termite	Dong tuew
KY003	Hirsutella	formicarum	Ophiocordycipitaceae	Hymenoptera ant	Dong tuew
KY004	Ophiocordyc	myrmecophi	Ophiocordycipitaceae	Hymenoptera ant	Dong tuew
KY005	Akanthomyc	cinereus	Cordycipitaceae	Araneae spider	Dong tuew
KY006	Akanthomyc	arachnophilu	Cordycipitaceae	Araneae spider	Dong tuew
KY007	Hypocrella	discoidea	Clavicipitaceae	Hemiptera scale insect	Dong tuew
KY008	Moelleriella	raciborskii	Clavicipitaceae	Hemiptera scale insect	Dong tuew
KY009	Aschersonia	hypocreoide	Clavicipitaceae	Hemiptera scale insect	Dong tuew
KY010	Aschersonia	oxystroma	Clavicipitaceae	Hemiptera scale insect	Dong tuew
KY011	Aschersonia	marginata	Clavicipitaceae	Hemiptera scale insect	Dong tuew
KY012	Paecilomyce	cinnamomeu	Clavicipitaceae	Hemiptera scale insect	Dong tuew
KY013	Hyperdermiu	bertonii	Clavicipitaceae	Hemiptera scale insect	Dong tuew
KY014	Torrubiella	sp.	Cordycipitaceae	Araneae spider	Dong tuew
KY015	Cordyceps	cf. martialis	Clavicipitaceae	Coleoptera Elateridae larv	Dong tuew
KY016	Cosmospora	dipcola	Clavicipitaceae	Hemiptera scale insect	Dong tuew
KY017	Pandora	dipterigena	Entomophthoraceae	Diptera adult	Dong tuew
KY018	Pandora	dipterigena	Entomophthoraceae	Diptera adult	Dong tuew
KY019	Aschersonia	minutispora	Clavicipitaceae	Hemiptera scale insect	Dong tuew
KY020	Pandora	dipterigena	Entomophthoraceae	Diptera adult	Dong tuew
KY021	Beauveria	sp.	Cordycipitaceae	Insecta	Dong tuew
KY022	Ophiocordyc	myrmecophi	Ophiocordycipitaceae	Hymenoptera ant	Heo Narok
KY023	Hirsutella	formicarum	Ophiocordycipitaceae	Hymenoptera ant	Heo Narok
KY024	Pandora	dipterigena	Entomophthoraceae	Diptera adult	Heo Narok
KY025	Verticillium	hemipterigen	Cordycipitaceae	Hemiptera hopper	Heo Narok

ตารางที่ 5 (Ĩ)η I·

Original code	Genus	Epithet	Family	Substrate	Site
KY026	Hyperdermiu	sp.	Clavicipitaceae	Hemiptera scale insect	Heo Narok
KY027	Hypocrella	discoidea	Clavicipitaceae	Hemiptera scale insect	Heo Narok
KY028	Isaria	sp.	Cordycipitaceae	Araneae spider	Heo Narok
KY029	Ophiocordyc	pseudoloydii	Ophiocordycipitaceae	Hymenoptera ant	Heo Narok
KY030	Hymenostilb	aurantiaca	Ophiocordycipitaceae	Hymenoptera ant	Heo Narok
KY031	Moelleriella	raciborskii	Clavicipitaceae	Hemiptera scale insect	Heo Narok
KY032	Ophiocordyc	myrmecophi	Ophiocordycipitaceae	Hymenoptera ant	Pha Kra Jai
KY033	Verticillium	hemipterigen	Cordycipitaceae	Hemiptera hopper	Pha Kra Jai
KY034	Gibella	sp.	Cordycipitaceae	Araneae spider	Pha Kra Jai
KY035	Conoideocre	luteorostrata	Clavicipitaceae	Hemiptera scale insect	Pha Kra Jai
KY036	Ophiocordyc	myrmecophi	Ophiocordycipitaceae	Hymenoptera ant	KM.33
KY037	Ophiocordyc	communis	Ophiocordycipitaceae	Isoptera termite	KM.33
KY038	Akanthomyce	pistillariformi	Cordycipitaceae	Lepidoptera moth	KM.33
KY039	Ophiocordyc	unilateralis	Ophiocordycipitaceae	Hymenoptera ant	KM.33
KY040	Cordyceps	cardinalis	Cordycipitaceae	Lepidoptera	KM.33
KY041	Ophiocordyc	pseudoloydii	Ophiocordycipitaceae	Hymenoptera ant	KM.33
KY042	Hirsutella	formicarum	Ophiocordycipitaceae	Hymenoptera ant	KM.33
KY043	Hyperdermiu	sp.	Clavicipitaceae	Hemiptera scale insect	KM.33
KY044	Hirsutella	nivea	Ophiocordycipitaceae	Hemiptera hopper	KM.33
KY045	Ophiocordyc	bruneipuncta	Ophiocordycipitaceae	Coleoptera	KM.33
KY046	Aschersonia	badia	Clavicipitaceae	Hemiptera scale insect	Pha Kluay Mai W
KY047	Isaria	tenuipes	Cordycipitaceae	Lepidoptera	KM.33
KY048	Pandora	dipterigena	Entomophthoraceae	Diptera adult	Pha Kluay Mai W

ตารางที่ 5 (Ĩ)η Ι·

Original code	Genus	Epithet	Family	Substrate	Site
KY049	Aschersonia	placenta	Clavicipitaceae	Hemiptera scale insect	Pha Kluay Mai W
KY050	Aschersonia	placenta	Clavicipitaceae	Hemiptera scale insect	KM.33
KY051	Pandora	dipterigena	Entomophthoraceae	Diptera adult	KM.33
KY052	Gibellula	mirabilis	Cordycipitaceae	Araneae spider	KM.33
KY053	Gibellula	sp.	Cordycipitaceae	Araneae spider	KM.33
KY054	Gibellula	sp.	Cordycipitaceae	Araneae spider	KM.33
KY055	Gibellula	sp.	Cordycipitaceae	Araneae spider	KM.33
KY056	Gibellula	pulchra	Cordycipitaceae	Araneae spider	KM.33
KY057	Aschersonia	raciborskii	Clavicipitaceae	Hemiptera scale insect	Pha Kluay Mai W
KY058	Akanthomyc	novoguineer	Cordycipitaceae	Hemiptera scale insect	KM.33
KY059	Paecilomyce	cinnamomeu	Clavicipitaceae	Hemiptera scale insect	Pha Kluay Mai W
KY060	Torrubiella	sp.	Cordycipitaceae	Araneae spider	KM.33
KY061	Cordyceps	sp.	Cordycipitaceae	cricket	KM.33
KY062	Verticillium	hemipterigen	Cordycipitaceae	Hemiptera hopper	KM.33
KY063	Ophiocordyc	myrmecophi	Ophiocordycipitaceae	Hymenoptera ant	Pha Kluay Mai W
KY064	Cordyceps	ninchukispor	Cordycipitaceae	Lepidoptera	Pha Kluay Mai W
KY065	Ophiocordyc	myrmecophi	Ophiocordycipitaceae	Hymenoptera ant	Pha Kluay Mai W
KY066	Aschersonia	oxystroma	Clavicipitaceae	Hemiptera scale insect	Pha Kluay Mai W
KY067	Hymenostilb	dipterigena	Ophiocordycipitaceae	Diptera adult	Pha Kluay Mai W
KY068	Aschersonia	raciborskii	Clavicipitaceae	Hemiptera scale insect	Pha Kluay Mai W
KY069	Gibellula	sp.	Cordycipitaceae	Araneae spider	Pha Kluay Mai W
KY070	Akanthomyc	pistillariformi	Cordycipitaceae	Lepidoptera moth	Mo Sing To
KY071	Akanthomyc	pistillariformi	Cordycipitaceae	Lepidoptera moth	Mo Sing To

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Original code	Genus	Epithet	Family	Substrate	Site
KY072	Cordyceps	tuberculata	Cordycipitaceae	Lepidoptera moth	Mo Sing To
KY073	Hirsutella	formicarum	Ophiocordycipitaceae	Hymenoptera ant	Mo Sing To
KY074	Isaria	javanica	Cordycipitaceae	Araneae spider	Mo Sing To
KY075	Isaria	javanica	Cordycipitaceae	Araneae spider	Mo Sing To
KY076	Ophiocordyc	communis	Ophiocordycipitaceae	Isoptera termite	Mo Sing To
KY077	Isaria	tenuipes	Cordycipitaceae	Araneae spider	Mo Sing To
KY078	Akanthomyc	novoguineer	Cordycipitaceae	Araneae spider	Mo Sing To
KY079	Akanthomyc	sp.	Cordycipitaceae	Araneae spider	Mo Sing To
KY080	Akanthomyc	websteri	Cordycipitaceae	Araneae spider	Mo Sing To
KY081	Hymenostilb	communis	Ophiocordycipitaceae	Isoptera termite	Mo Sing To
KY082	Isaria	sp.	Cordycipitaceae	Araneae spider	Mo Sing To
KY083	Hirsutella	sp.	Ophiocordycipitaceae	Araneae spider	Mo Sing To
KY084	Gibellula	clavulifera	Cordycipitaceae	Araneae spider	Mo Sing To
KY085	Erynia	sp.		Diptera adult	Mo Sing To
KY086	Ophiocordyc	unilateralis	Ophiocordycipitaceae	Hymenoptera ant	Mo Sing To
KY087	Akanthomyc	novoguineer	Cordycipitaceae	Araneae spider	Mo Sing To
KY088	Isaria	javanica	Cordycipitaceae	Araneae spider	Mo Sing To
KY089	Hirsutella	formicarum	Ophiocordycipitaceae	Hymenoptera ant	Mo Sing To
KY090	Ophiocordyc	sphecocepha	Ophiocordycipitaceae	Hymenoptera wasp	Mo Sing To
KY091	Hyperdermiu	sp.	Clavicipitaceae	Hemiptera scale insect	Mo Sing To
KY092	Isaria	javanica	Cordycipitaceae	Araneae spider	Mo Sing To
KY093	Isaria	tenuipes	Cordycipitaceae	Araneae spider	Mo Sing To
KY094	Akanthomyc	novoguineer	Cordycipitaceae	Araneae spider	Mo Sing To

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Original code	Genus	Epithet	Family	Substrate	Site
KY095	Pandora	dipterigena	Entomophthoraceae	Diptera adult	Mo Sing To
KY096	Hymenostilb	aurantiaca	Ophiocordycipitaceae	Hymenoptera ant	Mo Sing To
KY097	Hyperdermiu	sp.	Clavicipitaceae	Hemiptera scale insect	Mo Sing To
KY098	Akanthomyc	pistillariformi	Cordycipitaceae	Lepidoptera moth	Mo Sing To
KY099	Ophiocordyc	communis	Ophiocordycipitaceae	Isoptera termite	Mo Sing To
KY100	Aschersonia	placenta	Clavicipitaceae	Hemiptera scale insect	Mo Sing To
KY101	Aschersonia	raciborskii	Clavicipitaceae	Hemiptera scale insect	Mo Sing To
KY102	Ophiocordyc	nutans	Ophiocordycipitaceae	Heteroptera	Dan Chang
KY103	Hyperdermiu	sp.	Clavicipitaceae	Hemiptera scale insect	Dan Chang
KY104	Hirsutella	formicarum	Ophiocordycipitaceae	Hymenoptera ant	Dan Chang
KY105	Akanthomyc	novoguineer	Cordycipitaceae	Araneae spider	Dan Chang
KY106	Ophiocordyc	myrmecophi	Ophiocordycipitaceae	Hymenoptera ant	Dan Chang
KY107	Akanthomyc	sp.	Cordycipitaceae	Araneae spider	Dan Chang
KY108	Isaria	javanica	Cordycipitaceae	Araneae spider	Dan Chang
KY109	Hirsutella	sp.	Ophiocordycipitaceae	Araneae spider	Dan Chang
KY110	Ophiocordyc	communis	Ophiocordycipitaceae	Isoptera termite	Dan Chang
KY111	Isaria	sp.	Cordycipitaceae	Araneae spider	Dan Chang
KY112	Hypocrell	discoidea	Clavicipitaceae	Hemiptera scale insect	Dan Chang
KY113	Isaria	sp.	Cordycipitaceae	Araneae spider	Dan Chang
KY114	Aschersonia	placenta	Clavicipitaceae	Hemiptera scale insect	Dan Chang
KY115	Conoideocre	tenuis	Clavicipitaceae	Hemiptera scale insect	Dan Chang
KY116	Paecilomyce	cinnamomeu	Clavicipitaceae	Hemiptera scale insect	Dan Chang

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<u>เอกสารอ้างอิง</u>

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