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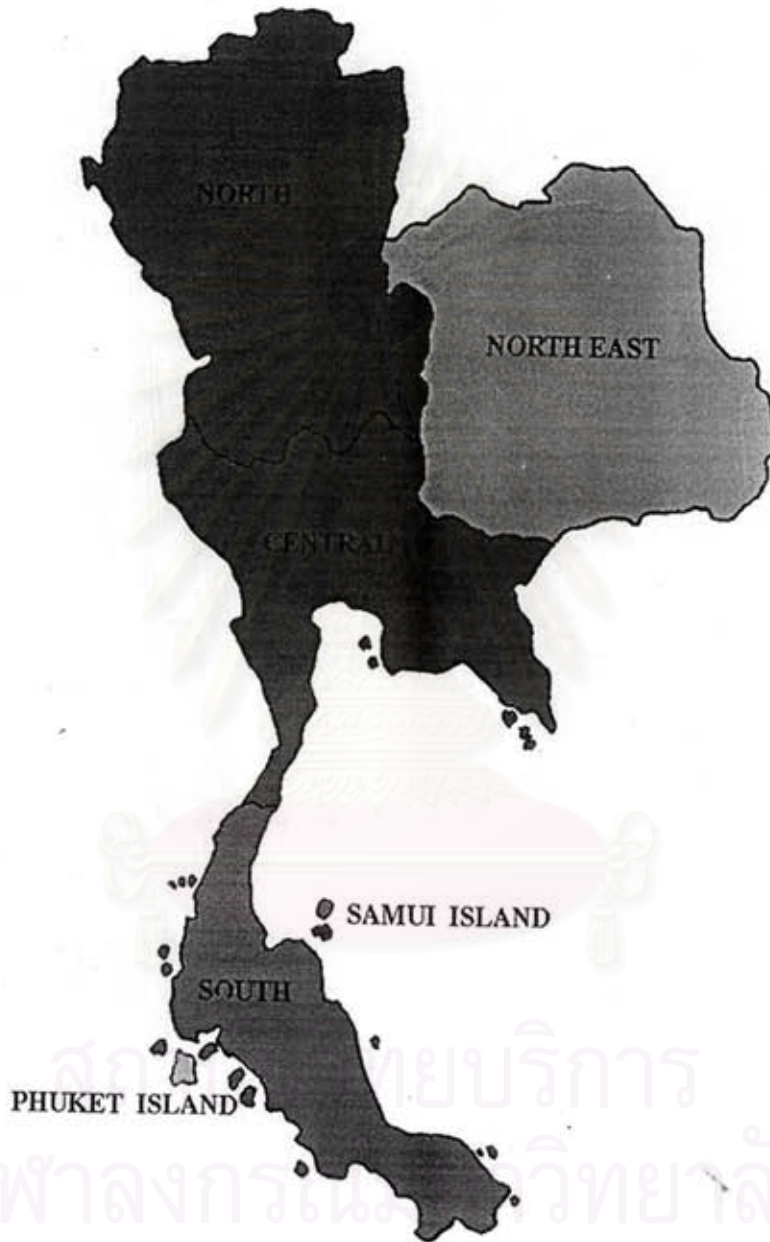
**APPENDICES**

สถาบันวิทยบริการ  
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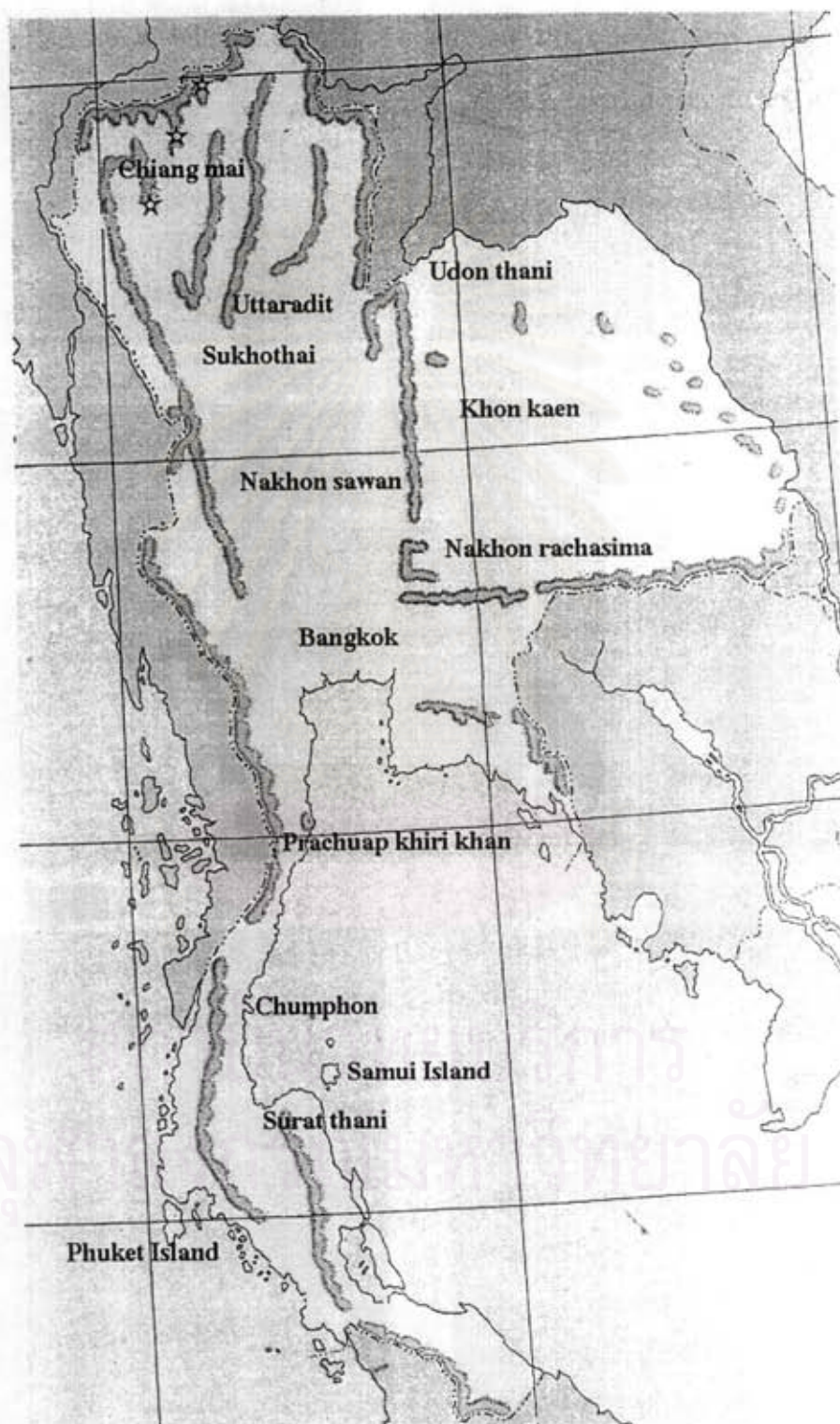
## APPENDIX A

Thailand map indicate six locations sampling of honeybee *A. cerana*

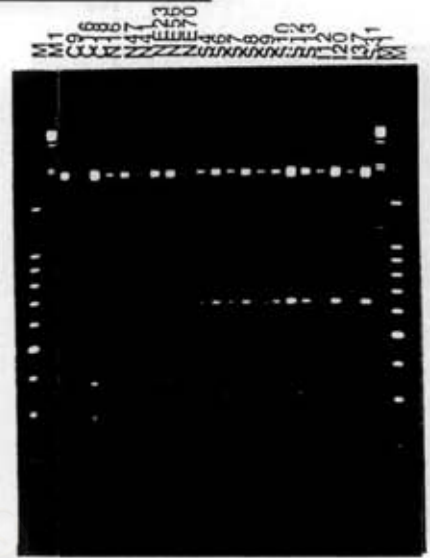


## APPENDIX B

Thailand map indicate six geographic locations sampling of honeybee *A. cerana*



Sample of *A. cerana* control region digested by *TaqI*

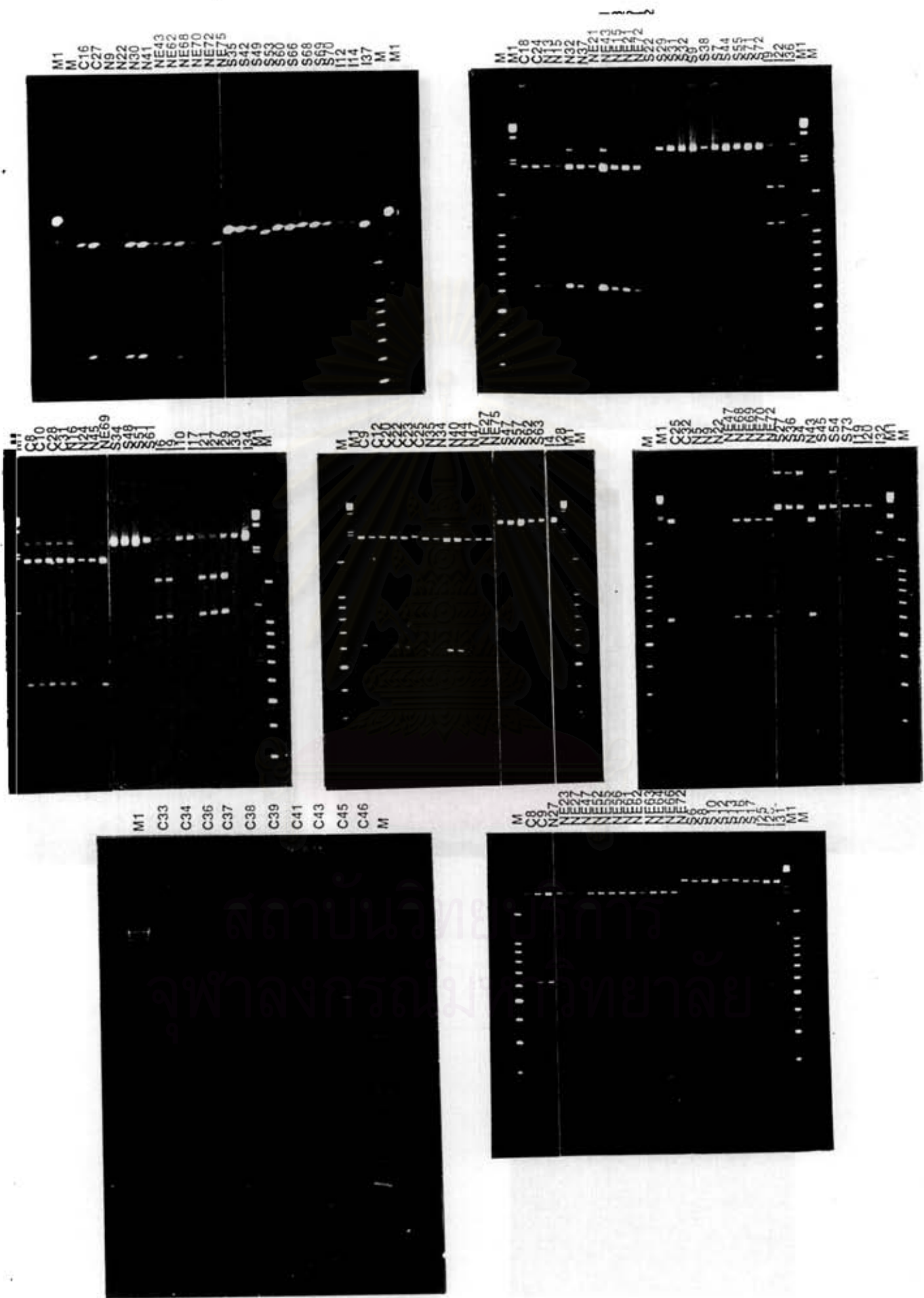


M1  
M  
C20  
C22  
S17  
S22  
S27  
S34  
S35  
S48  
S49  
I31  
I32  
I34  
S70  
M1  
M

M1  
C33  
C34  
C36  
C37  
C38  
C39  
C41  
C43  
C45  
C46  
M



M = 100 bp marker  
M1 = *Lamda/DraI*



M = 100 bp marker  
M1 = Lamda/ Dral



M = 100 bp marker

## APPENDIX D

Collection area and composite haplotype of *A. cerana* from the North of Thailand

Code of colonies	Sampling area	Composite Haplotype		
		I	II	III
N01	Muang, Lamphun	ND	AAA	ND
N02	Muang, Uttaradit	AAA	AAA	ND
N05	Muang, Lamphun	AAA	ND	AAC
N06	Muang, Lamphun	AAA	AAA	ND
N07	San pa tong, Chiang mai	AAA	AAA	ND
N09	San pa tong, Chiang mai	AAA	AAA	AAC
N12	San pa tong, Chiang mai	ND	AAA	ND
N13	Hang dong, Chiang mai	AAA	AAA	AAC
N14	Muang, Uttaradit	BAA	AAA	ND
N15	Muang, Phitsanulok	AAA	AAA	AAB
N16	Muang, Phitsanulok	ADA	AAA	AAC
N17	Muang, Phitsanulok	AAA	AAA	ND
N19	Phayuha khiri, Nakhon sawan	AAA	AAA	ND
N20	Manorom, Chai nat	AAA	AAA	ND
N21	Wat sing, Chai nat	AAG	AAA	ND
N22	Muang, Chai nat	AAA	AAA	AAC
N23	Banphot phisai, Nakhon sawan	AAA	AAA	ND
N24	Banphot phisai, Nakhon sawan	ND	AAA	AAD
N25	Banphot phisai, Nakhon sawan	AAA	AAA	ND
N26	Muang, Kamphaeng phet	AAA	AAA	ND
N27	Ban Tak, Tak	AAA	AAA	AAC
N28	Ban Tak, Tak	AAA	ND	ND
N29	Sam ngao, Tak	AAA	ACA	ND
N30	Sam ngao, Tak	AAA	ND	AAD
N32	Thoen, Lampang	AAA	AAA	AAC
N34	Thoen, Lampang	ND	ND	AAD
N35	Mae tha, Lampoon	ND	ND	AAE
N36	Mae tha, Lampoon	AAA	AAA	ND
N37	Doi saket, Chiang mai	AAA	AAA	AAC
N38	Doi saket, Chiang mai	ND	AAA	ND
N39	Doi saket, Chiang mai	AAA	AAA	ND
N40	Doi saket, Chiang mai	ND	ND	AAC
N41	Wiang pa pao, Chiang mai	AAA	ACA	AAC

Code of colonies	Sampling area	Composite Haplotype		
		I	II	III
N42	Wiang pa pao, Chiang mai	AAA	AAA	ND
N43	Wiang pa pao, Chiang mai	AAA	AAA	AAB
N44	Ngao, Lampang	AAA	AAA	AAC
N45	Sungmen, Phrae	AAA	AAA	AAB
N46	Sungmen, Phrae	AAA	AAA	ND
N47	Sungmen, Phrae	ND	AAA	AAB
N48	Sungmen, Phrae	AAA	AAA	ND



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**Collection area and composite haplotype of *A. cerana* from the Central of Thailand**

Code of colonies	Sampling area	Composite Haplotype		
		I	II	III
C01	Phrapradaeng, Samut prakan	ADA	AAA	ND
C02	Kamphaengsan, Nakhorn pathom	AAA	AAA	ND
C03	Dan chang, Suphan buri	AAA	ADA	ND
C04	Muang, Samut songkhram	AAA	AAA	ND
C05	Muang, Samut songkhram	AAA	AAA	ND
C06	Muang, Samut songkhram	AAH	AAA	ND
C07	Phrapradaeng, Samut prakan	ADA	AAA	ND
C08	Don tum, Nakhorn pathom	AAA	AAA	AAD
C09	Dan chang, Suphan buri	AAA	AAA	AAC
C10	Dan chang, Suphan buri	ADA	AAA	AAD
C11	Pong nam ron, Chanthaburi	AAA	AAA	ND
C12	Makham, Chanthaburi	AAA	AAA	AAC
C13	Makham, Chanthaburi	AAA	AAA	ND
C14	Makham, Chanthaburi	AAA	AAA	ND
C15	Muang, Trat	AAA	AAA	ND
C16	Khao saming, Trat	ND	AAA	AAC
C17	Khao saming, Trat	ND	AAA	ND
C18	Muang, Trat	AAA	AAA	AAD
C20	Sam roi yod, Prachuap khiri khan	ND	AAA	AAB
C21	Sam roi yod, Prachuap khiri khan	ND	AAA	ND
C22	Sam roi yod, Prachuap khiri khan	ND	AAA	AAB
C23	Thong pha phum, Kanchana buri	ND	AAA	AAC
C24	Muang, Phetchaburi	ND	AAA	AAC
C25	Maekrong, Samut songkhram	ND	AAA	AAB
C26	Maekrong, Samut songkhram	ND	AAA	ND
C27	Maekrong, Samut songkhram	ND	AAA	AAC
C28	Maekrong, Samut songkhram	ND	AAA	AAB
C29	Maekrong, Samut songkhram	ND	AAA	ND
C30	Muang, Samut sakhorn	ND	AAA	ND



Code of colonies	Sampling area	Composite Haplotype		
		I	II	III
C32	Lad lum kaew, Pratum tani	ND	ND	AAC
C33	Cha um, Phetchaburi	ND	ND	AAB
C34	Huaw hin, Prachuap khiri khan	ND	ND	AAD
C36	Pranburi, Prachuap khiri khan	ND	ND	AAD
C37	Kuyburi, Prachuap khiri khan	ND	ND	AAD
C38	Muang, Prachuap khiri khan	ND	ND	AAB
C39	Tubsakae, Prachuap khiri khan	ND	ND	AAB
C41	Bangsapan, Prachuap khiri khan	ND	ND	AAB
C43	Bangsapannoy, Prachuap khiri khan	ND	ND	AAB
C45	Bangsapannoy, Prachuap khiri khan	ND	ND	AAD
C46	Tubsakae, Prachuap khiri khan	ND	ND	AAB

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จุฬาลงกรณ์มหาวิทยาลัย

**Collection area and composite haplotype of *A. cerana* from the North/East of Thailand**

Code of colonies	Sampling area	Composite Haplotype		
		I	II	III
NE02	Na haeo, Loai	ND	AAA	ND
NE03	Na haeo, Loai	AAA	AAA	ND
NE14	Muang, Khonkaen	AAA	AAA	ND
NE15	Muang, Khonkaen	ADA	AAA	AAE
NE16	Chum phae, Khonkaen	AAA	AAA	ND
NE17	Chum phae, Khonkaen	AAA	AAA	ND
NE18	Chum phae, Khonkaen	AAH	AAD	ND
NE19	Chum phae, Khonkaen	AAH	ND	ND
NE20	Ubol ratana, Khonkaen	AAA	ACA	ND
NE21	Non sang, Nong bua lamphu	AAA	AAA	AAF
NE22	Non sang, Nong bua lamphu	AAA	AAA	ND
NE23	Non sang, Nong bua lamphu	AAA	AAA	AAB
NE24	Nong wua so, Udon thani	AAA	AAA	ND
NE25	Muang, Udon thani	AAA	AAA	ND
NE26	Muang, Udon thani	AAA	AAA	ND
NE27	Muang, Udon thani	AAA	AAA	AAF
NE28	Muang, Nongkhai	AAA	AAA	ND
NE29	Muang, Nongkhai	AAA	AAA	ND
NE30	Nong han, Udon thani	AAA	AAA	ND
NE31	Phang khon, Sakonnakhon	AAA	AAA	ND
NE32	Nong bon nak, Nakhonratchasima	AAA	AAA	ND
NE33	Nong bon nak, Nakhonratchasima	AAA	AAA	ND
NE34	Nong bon nak, Nakhonratchasima	AAA	ND	ND
NE43	Praconechai, Burirum	ND	ND	AAC
NE47	Praconechai, Burirum	ND	ND	AAD
NE52	Rattanaburi, Surin	ND	ND	AAD
NE55	Prasat, Surin	ND	ND	AAB
NE56	Prasat, Surin	ND	ND	AAB
NE61	Nongbunnak, Nakonrachsima	ND	ND	AAB
NE62	Nongbunnak, Nakonrachsima	ND	ND	AAB
NE63	Nongbunnak, Nakonrachsima	ND	ND	AAD
NE64	Nongbunnak, Nakonrachsima	ND	ND	AAB
NE66	Nongbunnak, Nakonrachsima	ND	ND	AAD
NE68	Nongbunnak, Nakonrachsima	ND	ND	AAB
NE69	Nongbunnak, Nakonrachsima	ND	ND	AAB

Code of colonies	Sampling area	Composite Haplotype		
		I	II	III
NE70	Thawatchaburi, Roiet	ND	ND	AAB
NE72	Warin chamrab, Ubon ratchathani	ND	ND	AAB
NE75	Muang, Konkaen	ND	ND	AAB



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จุฬาลงกรณ์มหาวิทยาลัย

**Collection area and composite haplotype of *A. cerana* from the South of Thailand**

Code of colonies	Sampling area	Composite Haplotype		
		I	II	III
S01	Thalang, Phuket	BBB	BBB	ND
S02	Muang, Chumphon	CED	BBB	ND
S03	Muang, Chumphon	BBB	BBB	ND
S04	Tha chana, Suratthani	ND	BBB	BBA
S06	Tha chana, Suratthani	BBB	BBB	BBA
S07	Tha chana, Suratthani	ND	BBB	BBA
S08	Tha chana, Suratthani	ND	BBB	BBA
S09	Tha chana, Suratthani	ND	BBB	BBA
S10	Tha chana, Suratthani	BBB	BBB	BBA
S11	Muang, Phuket	ND	BBB	ND
S12	Muang, Phuket	ND	BBB	BBA
S13	Muang, Phuket	BBB	BBB	BBA
S14	Thalang, Phuket	BBB	BBB	ND
S15	Thalang, Phuket	BBB	BBB	ND
S16	Muang, Phuket	BBB	BBB	BBA
S17	Sawi, Chumphon	BBB	BBB	BBA
S18	Sawi, Chumphon	BBB	BBB	ND
S20	Sawi, Chumphon	BBB	BBB	ND
S21	Muang, Chumphon	BBB	BBB	ND
S22	Muang, Chumphon	BBB	BBB	BBA
S23	Muang, Chumphon	BBB	BBB	ND
S24	Muang, Chumphon	ND	BBB	ND
S25	Kra buri, Ranong	BBB	BBB	ND
S27	Kapoe, Ranong	ND	BBB	BBA
S28	Kapoe, Ranong	BBB	BBB	ND
S29	Kapoe, Ranong	BBB	BBB	BBJ
S30	Kapoe, Ranong	BBB	BBB	ND
S31	Muang, Ranong	BBB	BBB	BBA
S32	Muang, Ranong	ND	BBB	BBA
S33	Khuraburi, Phangnga	BBB	BBB	ND
S34	Khuraburi, Phangnga	BBB	BBB	BBA
S35	Phanom, Suratthani	BBB	BBB	BBA
S36	Ao Luk, Krabi	BBB	BBB	BBA
S37	Ao Luk, Krabi	BBB	BBB	ND
S38	Ao Luk, Krabi	BBE	BBB	BBA
S39	Ao Luk, Krabi	ND	BBB	ND
S40	Ao Luk, Krabi	BBB	BBB	ND
S41	Muang, Krabi	ND	BBB	ND
S42	Muang, Krabi	BBB	BBB	BBA

Code of colonies	Sampling area	Composite Haplotype		
		I	II	III
S43	Muang, Krabi	BBB	BBB	ND
S44	Muang, Krabi	ND	BBB	BBA
S45	Muang, Krabi	ND	BBB	BBA
S46	Nua khlong, Krabi	ND	BBB	ND
S47	Nua khlong, Krabi	BBB	BBB	BBA
S48	Nua khlong, Krabi	BBB	BBB	BBA
S49	Nua khlong, Krabi	ND	BBB	BBA
S50	Khao phanom, Krabi	BBB	BBB	ND
S51	Thung yai, Nakhon si thammarat	BBC	BBB	BBG
S52	Thung yai, Nakhon si thammarat	BBB	BBB	ND
S53	Thung yai, Nakhon si thammarat	BBC	BBB	BBG
S54	Sikao, Trang	BBB	BBB	BBA
S55	Huai yot, Trang	ND	BBB	BBA
S56	Huai yot, Trang	BBB	BBB	ND
S57	Huai yot, Trang	BBB	BBB	BBA
S58	Huai yot, Trang	ND	BBB	ND
S59	Srinakarin, Phatthalung	BBF	BBB	ND
S60	Srinakarin, Phatthalung	CED	AEE	ND
S61	Srinakarin, Phatthalung	ND	BBB	BBA
S62	Pha bon, Phatthalung	BBB	BBB	BBA
S63	Pha bon, Phatthalung	BBB	BBB	BBA
S64	Muang, Songkhla	BBB	BBB	ND
S65	Muang, Songkhla	BBE	BBB	ND
S66	Muang, Songkhla	BBC	BBB	BBA
S67	Muang, Songkhla	ND	BBB	ND
S68	Muang, Songkhla	BBB	BBB	BBA
S69	Muang, Songkhla	BBB	BBB	BBA
S70	Chalerm pra, Nakhon si thammarat	BBB	BBB	BBA
S71	Tha sala, Nakhon si thammarat	BBB	BBB	BBA
S72	Tha sala, Nakhon si thammarat	ND	BBB	BBA
S73	Tha sala, Nakhon si thammarat	ND	ND	BBA

จุฬาลงกรณ์มหาวิทยาลัย

**Collection area and composite haplotype of *A. cerana* from the Samui Island of Thailand**

Code of colonies	Sampling area	Composite Haplotype		
		I	II	III
I04	Tham Bon Aungthong	ND	BBB	BBA
I06	Tham Bon Aungthong	ND	BBB	BCA
I09	Tham Bon Boput	BBB	BBB	BCA
I10	Tham Bon Maret	BBB	BBB	BBA
I12	Tham Bon Maret	BBB	BBB	BBA
I14	Tham Bon Limpanoi	BBB	BBB	BBA
I16	Tham Bon Maenam	BCB	BBC	ND
I17	Tham Bon Maenam	BBB	BBB	BBA
I19	Tham Bon Maenam	BBB	BBB	BBA
I20	Tham Bon Maenam	BBB	BBB	BBA
I21	Tham Bon Maenam	BCB	BBC	BCH
I22	Tham Bon Maenam	BCB	BBC	BCI
I23	Tham Bon Maenam	BCC	BBC	ND
I24	Tham Bon Maenam	BCB	BBC	ND
I25	Tham Bon Boput	BBB	BBB	BBA
I26	Tham Bon Boput	BBB	BBB	BBA
I27	Tham Bon Boput	BCC	BBC	BCA
I28	Tham Bon Boput	BBB	BBB	BBA
I29	Tham Bon Maret	BCC	BCC	BCA
I30	Tham Bon Maret	BCC	BBC	BBA
I31	Tham Bon Maret	BCC	BBC	BBA
I32	Tham Bon Maret	BCC	BBC	BCH
I33	Tham Bon Maret	BCC	BBC	ND
I34	Tham Bon Maret	ND	BBB	BBA
I35	Tham Bon Maret	BBB	BBB	ND
I36	Tham Bon Maret	BCC	BBC	BBA
I37	Tham Bon Boput	BBB	BBB	BBA

I = Composite haplotype of ATPase6-ATPase8 gene of mtDNA digested with *TaqI*, *SspI* and *VspI* (Songram, 1997)

II = Composite haplotype of sRNA gene, lrRNA gene and inter COI-COII of mtDNA digested with *DraI* (Sihanuntavong, 1997)

III = Composite haplotype of mtDNA control region digested with *TaqI*, *RsaI* and *HinfI* (Pootong, 1998)

ND = non determined

## APPENDIX E

AAATAATATA AAATAATTTT TAATATATAT ATATATATAT ATATATATAT ATTATAATTT  
TTATTTATTC ATAGTATTTA ATATATAAAT TTATTATTTA GTATAAAAAT TTAAATATAA  
AATTAACAT TTTATATTAT AAATATTTT TTTTATTAAT TAATTTAAAT ATTAATAATA  
AATAATAAAA TGAGTTTTTT TTTTTTTTGG TTATATTTTA TTTATTTTAA ATAAAATATA  
TATATATATA TATATAATAT TATATATATT TATAATTATA TAAATATATA TATATTATTT  
TATTCTCTAA TTATATATTA ATTTATAAAT AATTATATAT ATATAAATAT TAATTTTATA  
TTAATAAATA TATATATATA ATTATATATT GATTTATAAA TATTTATAAA ACCAATATTT  
ATTAATTTAT TTTTTAAAT TTAATAAATT TTATTAATTT AACTTAATTT TTTTACTAA  
TTTTAAAAAT TACATAATAA CATATATGAA TAAATAAGCA TAATAATTAA TTTTAAATAT  
TTTCTCTTAA ATTAATAAAT TTTAATAAAA AAACCTAAAT AAAAAATAAA AATTTTTTAA  
AATAAAAACT TTAATAAATA AAAATTTTAA AAAATAAAAA CTTTTTTTAA AAAATAAAAA  
ACTTTTTTAA AAAATAAAAA CTTTTTAAAA AAATAAAAA TTAATAAATA AAAAATTTTT  
AAAAAATAAA TAAATAAATA AATAGTAAAC TTATAAACAA TAAAAATAAT ATTTTCAATA  
ACTAATATTA ATATTAATAT CTTATTTTAA AATATTTTAC TTAATTTTAT ATATAGTTTA  
AAAAAACAT TATATTTTCA ATATAAAAAAT AATTAAATTT AATTTATAAA TATAATTAAG  
TCAAATTTAA TTTAAATAT CTAATAAATA TTTATTAATA AAGAAATATT AATAAATAAA  
GCTTCTAAT TTAACCTAG ATTCATAAAT AATCTATATT TCTTATTATA TAAATTAATT  
TAGATAAATA TTAATTTTAA AATAATTATA TAATAAGCTA AATAAAGCTA ACAGGTTTAT  
ACCCTGTCGA TAAATTAATA ATTTTATAT AAATTATTAA ATTTATTTTA GTGTTTAAAG  
CACATAAAAT TTTGAATTTT ATAGTATTAA CTAATTAAT AAATTTGGAT ATTAGTTAAT  
AAATAATAAC ATTTAAATTG CATTAAAAA TTAATATTTT ATATATTATA TCTAAAAAAG  
TAATATGTCT GATAAAGAA ATATTTTGAT AAAATATTAA TGTATAATTT TATATATACT  
ATTACTTATC TTCTTCATAA ATTTTAAATA CCACTGATTT ATTTATTTTT TAATTACTAT  
TTTTGTATTA ATAATAAATT CCAATAATAT TTTTATTCAA TGAATATTAA TAGAATTTGG  
TACAATCATT AGAATTAGAT TAATTAATAT TAAATCCACA AATAAAACCC CAAGATTAAT  
TTATTATTCA GTATCAGTAA TTTCAAGAAT TTTTTATTTC TTTATAATTA TTGTACTTT  
ATCATCCATT AGATTTACTA AAACAGATAC TTTTAATTTT ATAGTTCAAA TAATATTTTT  
TTTTAAAAAT GGAACCTTCC CCTTTCATTT TTGAATAAAT TATTCTTATG AAATAATAAA  
TTGAAAGCAA ATTTTTTTAA TATCAACATT AATTAAATTT ATTTCAATTT ATATAATAGT  
TTCAATAACT AAAATTAATT CATGAACATT ATATTTTTTA ATTACAAATA GATTATATAT  
TTCATTTTAT GCTAATAAAT TTTACACTCT AAAAAAATTA CTAGCATGTT CAACAATTTT  
TAATTCATTC TATTTTATTT TTATTTTAGA ATTAATAAAA AATATATTTA TTGCTATAAT  
TATTTTATAT TCATTTAATT ATTTTTTATT AATTAGATTC TTAATAAAT TTAATATTCA  
AAATTTAAT TTTATATTTT ACAATAAATA TCAAAATAT ACATTCCTAA CATTAATATT  
TAATTTATTCA ATATATCCAA TTTTTCTTTC ATTTGTAATT AAATGAAATC TAATTTTAT  
AATAGTAAGA GTTAAAGCTT ATAATTGAAT TTTATTCTT TTAATAATTT CTAGAATATT  
AATAATTTGA AATTATATTA TTATTTTAAA ACGTGTATTT TTAATAAATA ATTTTATAA  
AAATAATTTT ATTGAT

Control region sequence of *A. mellifera* (Crozier and Crozier, 1992)

## APPENDIX F

Comparisons of restricted fragment size (base pair) by *NdeI*, *SwaI*, *TaqI*, *HinfI* and *HindIII* in control region between sequence of *A. mellifera ligustica* (Crozier and Crozier, 1992) and amplified control region of *A. mellifera* (*A. mell*)

Enzyme	Template DNA	Restriction site	Size of fragment	Total
<i>NdeI</i> , <i>SwaI</i>	<i>A. mellifera</i>	0	-	2226
	<i>A. mell</i>	0	-	2560
<i>TaqI</i>	<i>A. mellifera</i>	1	1076, 1150	2226
	<i>A. mell</i>	1	1750, 810	2560
<i>HinfI</i>	<i>A. mellifera</i>	2	976, 969, 281	2226
	<i>A. mell</i>	3	800, 800, 680, 280	2560
<i>HindIII</i>	<i>A. mellifera</i>	2	1156, 948, 122	2226
	<i>A. mell</i>	2	1070, 1404, 86	2560

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## APPENDIX G

Blast result of *A. mellifera* in ND<sub>2</sub> gene

Sequences producing significant alignments: (bits) Value

gb|L06178|AMFGENOM *Apis mellifera ligustica* complete mitochondr... 161 3e-38  
gb|U35757|AMU35757 *Apis mellifera meda* NADH dehydrogenase subun... 64 5e-09  
gb|U35752|AMU35752 *Apis mellifera ligustica* NADH dehydrogenase ... 64 5e-09  
gb|U35752|AMU35752 *Apis mellifera carnica* NADH dehydrogenase su... 64 5e-09  
gb|U35752|AMU35752 *Apis mellifera mellifera* NADH dehydrogenase ... 64 5e-09  
gb|U35752|AMU35752 *Apis mellifera ligustica* NADH dehydrogenase ... 64 5e-09  
gb|U35752|AMU35752 *Apis mellifera mellifera* NADH dehydrogenase ... 64 5e-09

gb|L06178|AMFGENOM *Apis mellifera ligustica* complete mitochondrial genome  
 Length = 16343

Score = 161 bits (81), Expect = 3e-38  
 Identities = 87/90 (96%)  
 Strand = Plus / Plus

Query: 11 aaaagtaatatgtctgataaaagaaatatttgataaaatattaatgtataatttatat 70  
 |||  
 Sbjct: 430 aaaagtaatatgtctgataaaagaaatatttgataaaatattaatgtataatttatat 489

Query: 71 atactattactatcttcnnataaattt 100  
 |||  
 Sbjct: 490 atactattactatcttcataaattt 519

gb|U35757|AMU35757 *Apis mellifera meda* NADH dehydrogenase subunit 2 (ND2) gene,  
 mitochondrial gene encoding mitochondrial protein,  
 partial cds  
 Length = 656

Score = 63.9 bits (32), Expect = 5e-09  
 Identities = 38/41 (92%)  
 Strand = Plus / Plus

Query: 60 taattttatataactattactatcttcnnataaattt 100  
 |||  
 Sbjct: 1 taattttatataactattactatcttcataaattt 41

gb|U35752|AMU35752 *Apis mellifera ligustica* NADH dehydrogenase subunit 2 (ND2) gene,  
 mitochondrial gene encoding mitochondrial protein,  
 partial cds  
 Length = 656

Score = 63.9 bits (32), Expect = 5e-09  
 Identities = 38/41 (92%)  
 Strand = Plus / Plus

Query: 60 taattttatataactattactatcttcnnataaattt 100  
 |||  
 Sbjct: 1 taattttatataactattactatcttcataaattt 41

gb|U35748|AMU35748 *Apis mellifera carnica* NADH dehydrogenase subunit 2 (ND2) gene,

## Blast result of *A. mellifera* in ND<sub>2</sub> gene (continue)

mitochondrial gene encoding mitochondrial protein,  
partial cds  
Length = 656

Score = 63.9 bits (32), Expect = 5e-09  
Identities = 38/41 (92%)  
Strand = Plus / Plus

Query: 60 taattttatataactataactatctctcnnnataaatttt 100

|||||  
|||||

Sbjct: 1 taattttatataactataactatctctcnnnataaatttt 41

gb|U35760|AMU35760 Apis mellifera mellifera NADH dehydrogenase subunit 2 (ND2) gene,  
mitochondrial gene encoding mitochondrial protein,  
partial cds  
Length = 656

Score = 63.9 bits (32), Expect = 5e-09  
Identities = 38/41 (92%)  
Strand = Plus / Plus

Query: 60 taattttatataactataactatctctcnnnataaatttt 100

|||||  
|||||

Sbjct: 1 taattttatataactataactatctctcnnnataaatttt 41

gb|U35754|AMU35754 Apis mellifera ligustica NADH dehydrogenase subunit 2 (ND2) gene,  
mitochondrial gene encoding mitochondrial protein,  
partial cds  
Length = 656

Score = 63.9 bits (32), Expect = 5e-09  
Identities = 38/41 (92%)  
Strand = Plus / Plus

Query: 60 taattttatataactataactatctctcnnnataaatttt 100

|||||  
|||||

Sbjct: 1 taattttatataactataactatctctcnnnataaatttt 41

gb|U35758|AMU35758 Apis mellifera mellifera NADH dehydrogenase subunit 2 (ND2) gene,  
mitochondrial gene encoding mitochondrial protein,  
partial cds  
Length = 656

Score = 63.9 bits (32), Expect = 5e-09  
Identities = 38/41 (92%)  
Strand = Plus / Plus

Query: 60 taattttatataactataactatctctcnnnataaatttt 100

|||||  
|||||

Sbjct: 1 taattttatataactataactatctctcnnnataaatttt 41

## BIOGRAPHY

Mr. Suratep Pootong was born on March 17, 1972. He graduated with the Bachelor degree of Science in Biochemistry from Chulalongkorn University in 1994. He was enrolled in Master degree of Science, department of Biochemistry, Chulalongkorn University in 1996.



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