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APPENDIX A

Shrimp data collection from 5 geographic investigated samples

A.1 Shimp Data form Satun. (18 Feb. 97)

Sample No.	Sex	Total length[a](cm)	Carapace length[b](cm)	Weight(g)
SAT 1	F[c]	26.5	7.10	187.13
SAT 2	F	27.3	7.55	205.83
SAT 3	F	29.0	8.30	254.80
SAT 4	M[d]	29.0	5.80	112.67
SAT 5	M	21.2	5.20	86.4!
SAT 6	M	20.9	5.25	86.93
SAT 7	M	21.0	5.15	82.82
SAT 8	F	24.5	6.80	156.65
SAT 9	F	27.0	7.15	204.00
SAT 10	F	26.4	7.10	184.09
SAT 11	M	24.0	6.20	128.25
SAT 12	M	22.5	5.10	107.58
SAT 13	M	22.0	5.50	93.08
SAT 14	M	21.2	5.15	87.66
SAT 15	M	23.5	5.85	116.09
SAT 16	M	23.0	5.70	110.74
SAT 17	M	23.5	5.70	110.94
SAT 18	M	22.5	5.60	107.36
SAT 19	F	26.8	7.20	182.56
SAT 20	F	26.0	7.25	180.97
SAT 21	F	26.4	7.00	185.67
SAT 22	F	29.5	8.00	230.54
SAT 23	F	26.7	7.45	196.06
SAT 24	F	27.5	7.55	205.91
SAT 25	F	28.3	7.85	222.55
SAT 26	F	27.6	7.50	195.61
SAT 27	M	20.5	5.10	80.18
SAT 28	F	30.0	8.70	290.39
SAT 29	F	28.0	7.70	217.30

Sample No.	Sex	Total length[a](cm.)	Carapace length[b] cm)	Weight(g)
SAT 30	M	22.5	5.65	105.99
SAT 31	F	23.7	6.20	123.37
SAT 32	F	26.9	7.65	183.09
SAT 33	M	21.2	5.35	86.50
SAT 34	F	27.0	7.10	200.15
SAT 35	M	22.6	5.60	103.14
SAT 36	M	21.8	5.45	91.77
SAT 37	M	22.9	5.90	110.10
SAT 38	M	22.5	5.70	105.84
SAT 39	M	21.5	5.30	91.36
SAT 40	F	25.6	6.90	158.24
SAT 41	F	27.0	7.25	190.21
SAT 42	F	29.5	8.05	247.51
SAT 43	F	26.9	7.40	193.63
SAT 44	F	26.3	7.35	194.04
SAT 45	F	26.5	7.25	183.04
SAT 46	F	29.3	8.10	238.30
SAT 47	F	26.7	7.40	181.63
SAT 48	F	25.9	6.70	167.24
SAT 49	F	27.0	7.40	196.57
SAT 50	F	28.0	7.90	220.15

A.2   Shimp Data form Trang (19 Feb. 97)

Sample No.	Sex	Total length[a](cm)	Carapace length[b] (cm)	Weight (g)
TNG 1	F	29.20	8.20	246.87
TNG 2	F	28.10	7.70	217.40
TNG 3	F	29.20	8.10	237.38
TNG 4	F	27.40	7.10	202.03
TNG 5	F	26.00	6.90	175.06
TNG 6	F	24.50	6.70	148.48
TNG 7	F	27.60	7.25	191.95
TNG 8	F	27.30	7.40	203.74

Sample No.	Sex	Total length^a(cm)	Carapace length^b cm)	Weight(g)
TNG 9	M	21.60	5.50	96.76
TNG 10	F	24.55	6.60	153.98
TNG 11	M	23.00	5.80	110.72
TNG 12	F	26.10	6.80	177.74
TNG 13	M	23.80	5.85	126.85
TNG 14	M	22.75	5.65	112.20
TNG 15	F	26.75	7.15	196.66
TNG 16	F	24.50	6.45	138.32
TNG 17	M	22.75	5.90	113.36
TNG 18	F	25.20	6.70	157.28
TNG 19	F	27.70	7.70	221.74
TNG 20	F	26.60	7.30	192.10
TNG 21	F	26.80	7.50	205.82
TNG 22	M	20.60	5.35	87.26
TNG 23	M	22.20	5.50	100.18
TNG 24	F	26.30	7.00	175.70
TNG 25	F	26.20	7.20	174.25
TNG 26	M	21.40	5.20	90.74
TNG 27	M	23.50	5.85	126.62
TNG 28	M	22.50	5.45	107.21
TNG 29	M	21.00	5.25	90.52
TNG 30	M	22.50	5.60	110.67
TNG 31	M	21.60	5.35	93.92
TNG 32	F	25.90	7.20	176.78
TNG 33	M	21.00	5.35	91.65
TNG 34	M	22.30	5.55	104.47
TNG 35	M	22.35	5.66	107.60
TNG 36	M	23.70	6.00	118.07
TNG 37	M	21.90	5.65	104.03
TNG 38	M	22.80	5.65	107.02
TNG 39	M	22.60	5.55	104.14
TNG 40	M	21.10	5.30	86.60

Sample No.	Sex	Total length*(cm)	Carapace length[b] cm)	Weight(g)
TNG 41	F	26.90	7.10	185.67
TNG 42	F	26.50	7.30	188.92
TNG 43	F	23.60	6.15	135.78
TNG 44	F	29.60	8.05	260.40
TNG 45	M	23.10	5.80	111.98
TNG 46	F	26.90	7.40	200.18
TNG 47	F	24.50	6.70	141.36
TNG 48	F	26.70	7.00	187.16
TNG 49	M	22.50	5.70	105.82
TNG 50	F	26.40	7.20	168.86
TNG 51	F	27.20	7.10	170.39
TNG 52	M	23.90	6.10	152.06
TNG 53	F	27.00	7.20	201.56
TNG 54	M	21.90	5.40	100.15

A.3 Shimp Data form Phangnga (19 March 97)

Sample No.	Sex	Total length* (cm)	Carapace length[b] (cm)	Weight (g)
PHA 1	M	21.80	4.00	76.97
PHA 2	F	23.30	4.50	90.80
PHA 3	F	21.00	4.20	71.56
PHA 4	F	21.00	3.80	78.83
PHA 5	F	23.70	5.10	132.20
PHA 6	M	18.10	3.10	50.04
PHA 7	M	20.50	3.80	65.56
PHA 8	F	23.50	4.40	105.12
PHA 9	F	21.50	4.00	78.10
PHA 10	F	28.00	6.10	180.82
PHA 11	F	27.50	5.90	180.16
PHA 12	F	21.50	3.65	74.21
PHA 13	F	21.50	4.00	77.15
PHA 14	M	21.00	3.70	70.92
PHA 15	M	19.60	3.30	56.66

Sample No.	Sex	Total length^a(cm)	Carapace length^b cm)	Weight(g)
PHA 16	F	21.20	3.95	80.45
PHA 17	M	20.30	3.60	65.01
PHA 18	M	20.20	3.55	61.07
PHA 19	M	21.10	3.60	71.52
PHA 20	F	23.50	4.50	95.85
PHA 21	F	21.40	3.90	77.64
PHA 22	M	20.90	3.70	73.53
PHA 23	M	19.90	3.60	61.18
PHA 24	F	23.60	4.50	103.11
PHA 25	F	21.60	4.00	82.03
PHA 26	F	24.10	4.60	109.40
PHA 27	F	22.40	4.40	89.48
PHA 28	F	21.10	3.85	71.99
PHA 29	F	23.30	4.60	100.35
PHA 30	M	21.50	3.70	72.81
PHA 31	M	21.10	3.75	69.61
PHA 32	F	22.30	4.20	90.10
PHA 33	F	23.20	4.40	94.34
PHA 34	F	24.10	4.50	110.4
PHA 35	F	21.10	3.85	71.84
PHA 36	M	20.60	3.70	64.70
PHA 37	M	19.50	3.45	59.42
PHA 38	M	20.40	3.60	66.44
PHA 39	M	19.70	3.50	59.16

A.4 Shimp Data form Chumphon. (4 June 97)

Sample No.	Sex	Total length^a(cm)	Carapace length^b(cm)	Weight(g)
CHM 1	M	22.2	5.48	106.68
CHM 2	F	25.2	6.84	156.09
CHM 3	M	22.5	5.25	97.99
CHM 4	M	23.2	5.86	106.78
CHM 5	M	24.4	5.80	130.66

Sample No.	Sex	Total length[a](cm)	Carapace length[b] cm)	Weight(g)
CHM 6	M	21.9	5.00	95.21
CHM 7	M	22.2	5.14	104.21
CHM 8	M	21.0	5.11	85.64
CHM 9	F	26.0	6.20	166.47
CHM 10	F	24.6	6.24	137.82
CHM 11	M	22.8	5.60	109.69
CHM 12	M	23.2	5.24	119.00
CHM 13	M	20.3	4.70	74.28
CHM 14	M	21.0	5.13	88.54
CHM 15	M	24.3	5.95	119.96
CHM 16	M	22.9	5.70	110.31
CHM 17	M	22.2	5.30	96.47
CHM 18	F	22.9	5.55	107.47
CHM 19	M	22.7	4.64	106.94
CHM 20	F	25.3	6.76	151.34
CHM 21	F	24.0	5.88	136.38
CHM 22	F	23.0	6.08	123.73
CHM 23	F	27.4	7.40	212.25
CHM 24	F	25.5	6.52	155.43
CHM 25	M	21.3	5.18	89.86
CHM 26	M	20.9	5.06	84.23
CHM 27	F	24.4	5.46	138.36
CHM 28	F	23.5	6.20	127.16
CHM 29	F	30.2	8.18	276.10
CHM 30	F	23.7	6.20	128.58
CHM 31	F	24.6	6.40	150.51
CHM 32	F	24.4	6.52	148.92
CHM 33	F	24.0	6.20	137.73
CHM 34	F	25.6	6.80	164.73
CHM 35	F	24.5	6.50	140.91
CHM 36	M	21.5	5.36	94.82
CHM 37	M	21.2	5.36	91.37

Sample No.	Sex	Total length^a(cm)	Carapace length^b cm)	Weight(g)
CHM 38	F	23.8	6.06	136.65
CHM 39	M	21.3	5.46	94.07
CHM 40	M	21.1	5.42	88.38
CHM 41	M	23.5	5.94	121.07
CHM 42	M	22.6	5.86	110.74
CHM 43	F	24.3	6.21	148.52
CHM 44	F	23.8	6.30	137.25
CHM 45	F	23.9	6.49	137.25
CHM 46	M	21.2	5.26	82.90
CHM 47	M	21.0	5.19	93.55
CHM 48	F	24.7	6.36	147.60
CHM 49	F	29.7	8.16	260.90
CHM 50	F	23.5	6.00	125.95
CHM 51	F	26.3	7.14	188.11
CHM 52	F	23.1	5.94	121.92
CHM 53	M	21.3	4.59	100.50
CHM 54	F	25.2	6.66	154.58
CHM 55	M	22.0	5.30	92.51

A.5 shimp Data form Trat (29 November 97)

Sample No.	Sex	Total length^a (cm)	Carapace length^b(cm)	Weight(g)
TRAT 1	M	19.5	7.5	95
TRAT 2	M	-	-	-
TRAT 3	M	22.0	9.0	95
TRAT 4	M	20.6	8.0	75
TRAT 5	M	22.3	8.9	110
TRAT 6	M	21.9	8.8	95
TRAT 7	M	20.9	7.5	105
TRAT 8	M	21.5	8.5	95
TRAT 9	M	20.3	7.5	85
TRAT 10	M	21.2	8.0	100
TRAT 11	M	21.2	8.1	105

Sample No.	Sex	Total length[a](cm)	Carapace length[b] cm)	Weight(g)
TRAT 12	M	20.1	8.0	90
TRAT 13	F	25	10.0	170
TRAT 14	F	25.1	10.5	160
TRAT 15	F	26.3	10.6	180
TRAT 16	F	26.1	10.6	185
TRAT 17	F	24	10.0	155
TRAT 18	F	24.6	9.5	155
TRAT 19	F	25.0	10.0	160
TRAT 20	F	27.0	11.0	210
TRAT 21	F	24.5	10.0	170
TRAT 22	F	24.5	10.0	180
TRAT 23	F	24.9	10.0	170
TRAT 24	F	25.8	10.8	180
TRAT 25	F	23.6	9.7	145
TRAT 26	F	24.4	10.0	140
TRAT 27	F	25.1	10.0	180
TRAT 28	F	27.0	11.0	210
TRAT 29	F	25.6	10.5	185
TRAT 30	F	27.0	11.0	195
TRAT 31	F	31.0	13.0	310
TRAT 32	F	24.1	9.5	150
TRAT 33	F	25.0	10.7	180
TRAT 34	F	25.0	10.5	145
TRAT 35	F	27.0	11.0	200

[a] Total length   = the length measured from the rostrum to the end of telson.

[b] Carapace length = the length measured from the eye – orbital to the end of carapace.

[c] F = Female

[d] M = Male

APPENDIX B

Fragment sharing of RAPD patterns observed in the 5 geographic samples of *P. monodon* when analyzed by primer UBC268, UBC273 and UBC299

B.1   Primer   UBC268

Size (bp)	Genotype																													
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD
1600	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	0	0	0
1450	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1
880	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	0	1	0	0	0	0	0	0	1	0
820	1	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0
800	1	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	0	0	1	1	0	1
740	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
720	1	1	1	1	0	0	1	1	0	1	1	1	0	0	1	0	1	1	1	0	0	1	1	0	0	0	1	0	1	1
680	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
620	1	1	1	1	1	1	0	0	1	0	0	1	1	0	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1
600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
540	1	1	1	1	1	1	0	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	0	1
500	1	1	0	0	1	1	0	0	0	0	1	0	1	0	1	0	1	1	1	0	0	1	1	1	1	0	0	1	0	1
480	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
420	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
400	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
360	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
300	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
260	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1

B.2 Primer UBC273

	Genotype																															
size (bp)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF
1600	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1400	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1100	1	0	1	1	1	0	0	1	0	0	0	0	1	1	1	1	1	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1
1050	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	0	0	0	1	1	0	1	1	1	1	1	1	1
960	1	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
900	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1	0	0	0	1	1	1	1	0	1	1
880	1	1	1	0	0	0	1	1	0	0	0	0	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1
860	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
730	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1
700	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
620	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0
600	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
550	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
500	1	1	0	1	0	1	1	1	0	0	1	0	1	0	0	1	1	1	1	1	1	1	0	1	0	0	1	0	0	0	0	1
460	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	0	0	0	0	0
440	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1
400	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

B.3 Primer UBC 299

size (bp)	Genotype																									
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1450	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1
1400	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1
1200	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1100	1	1	0	0	0	0	1	1	0	0	1	0	1	1	0	0	1	0	0	1	0	0	1	1	1	1
1050	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	0	0	0	1	1	1	1	0
950	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
590	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1
570	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
520	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	0	1	1
480	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	1	1	0
450	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0
340	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1
320	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
300	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
240	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
200	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

1 = Presence of the band

0 = Absence of the band

APPENDIX C

Construction of UPGMA dendrograms using pairwise genetic distances from primer UBC268, UBC273 and UBC299 and the average pairwise distances overall primers.

C.1 From primer UBC268

Neighbor-Joining/UPGMA method version 3.572c

UPGMA method

Negative branch lengths allowed

```
          +Chumphon
      +--1
   +--2   +Phangnga
   !   !
 +--3   +Satun
 !   !
--4   +Trang
 !
 +Trat
```

Between	And	Length
4	3	0.01981
3	2	0.00105
2	1	0.00045
1	Chumphon	0.00000
1	Phangnga	0.00000
2	Satun	0.00045
3	Trang	0.00150
4	Trat	0.02131

Treefile

(((((Chumpon:0.00000,Phangnga:0.00000):0.00045,Satun:0.00045):0.00105,

Trang:0.00150):0.01981,Trat:0.02131).

C.2 From primer UBC273

Neighbor-Joining/UPGMA method version 3.572c

UPGMA method

Negative branch lengths allowed

```
              +Chumphon
         +--1
      +--2    +Phangnga
      !   !
   +--3    +Satun
   !   !
 --4    +Trang
   !
   +Trat
```

Between	And	Length
4	3	0.01675
3	2	0.00108
2	1	0.00092
1	Chumphon	0.00000
1	Phangnga	0.00000
2	Satun	0.00092
3	Trang	0.00200
4	Trat	0.01875

Treefile

(((((Chumphn:0.00000,Phangnga:0.00000):0.00092,Satun:0.00092):0.00108,
Trang:0.00200):0.01675,Trat:0.01875).

C.3 From primer UBC299

Neighbor-Joining/UPGMA method version 3.572c

UPGMA method

Negative branch lengths allowed

```
          +Chumphon
      +--2
      !   +Trang
   +--3
   !  !  +Phangnga
--4   +--1
   !       +Satun
   !
   +Trat
```

Between	And	Length
4	3	0.01409
3	2	0.00165
2	Chumphon	0.00005
2	Trang	0.00005
3	1	0.00165
1	Phangnga	0.00005
1	Satun	0.00005
4	Trat	0.01579

Treefile

((((Chumphn:0.00005,Trang:0.00005):0.00165,(Phangnga:0.00005, Satun:0.00005):0.00165):0.01409,Trat:0.01579).

C.4 From overall primer

Neighbor-Joining/UPGMA method version 3.572c.

UPGMA method

Negative branch lengths allowed

```
             +Chumphon
          +--1
       +--2   +Phangnga
       !   !
    +--3   +Satun
    !   !
 --4   +Trang
    !
    +--Trat
```

Between	And	Length
4	3	0.05642
3	2	0.00071
2	1	0.00082
1	Chumphon	0.00000
1	Phangnga	0.00000
2	Satun	0.00082
3	Trang	0.00153
4	Trat	0.05795

Treefile

(((((Chumphon:0.00000,Phangnga:0.00000):0.00082,Satun:0.00082):0.00071,
Trang:0.00153):0.05642,Trat:0.05795).

BIOGRAPHY

Miss Wannalux Wudthijinda was born on Febuary 12, 1970 in Bangkok. She graduated with the degree of Bachelor of Science from the Department of Biology at Burapha University in 1992. She has studied for the degree of Master of Science at the program of Biotechnology, Chulalongkorn University since 1995.